

v.36F, no.12-49 YALE & TOWNE MANUF'G CO. V. CORBIN *ET AL.*

Circuit Court, D. Connecticut.

November 27, 1888.

1. PATENTS FOR INVENTIONS—INFRINGEMENT—LOCK AND KEY.

Letters patent No. 234, 002, issued November 2, 1880, to Charles C. Dickerman, for an improved lock and key, the improvement consisting in the use of a sinuous parallel key-way in the rotating hub, and a corrugated flat metal key, of equal thickness throughout, are not infringed by a lock having a sinuous key-hole without parallelism in the sides of the slot, through the hub, and a key, grooved on each side, without corresponding projections opposite the grooves.

2. SAME—LOCK CYLINDERS.

Letters patent No. 234, 213, issued November 9, 1880, to Warren H. Taylor, for improvement in lock cylinders, the improvement consisting in the use of a key-hub composed wholly or partly of sinuously or angularly slotted disks, are not infringed by a key-hub having an angular key-hole leading to a smooth slot.

3. SAME—PATENTABILITY—LOCKS AND LATCHES.

The second, third, and fourth claims of letters patent No. 180, 287, issued July 25, 1876, to Henry R. Towne, for an improvement in locks and latches, consisting of a slide within the lock case, and controllable only when the door is open, and provided with wings to engage with either or both of the escutcheons and prevent their withdrawal from the lock case, describe a patentable invention.

Bill for Injunction by the Yale & Towne Manufacturing Company against P. & F. Corbin.

Frederick H. Betts and J. H. Hindon Hyde, for plaintiff.

Charles E. Mitchell, for defendants.

SHIPMAN, J. This is a bill in equity to restrain the defendants from the alleged infringement of three letters patent, viz., No. 180, 287, dated July 25, 1876, to Henry R. Towne, for an improvement in locks and latches; No. 234, 002, dated November 2, 1880, to Charles C. Dickerman, for an improved lock and key; and No. 234, 213, dated November 9, 1880, to Warren H. Taylor, for improvements in lock cylinders. The Dickerman patent is the most important, and will be first considered. The application for this patent was pending for along time in the patent office. The claims, as presented from time to time, were rejected, and therefore the specification and claims were frequently amended. The final specification was carefully drawn, and presents clearly the views which the assignee and plaintiff had of the nature of the invention. The history of the application shows with significance that the patent-office limited the scope of the patented invention to a narrow compass, and that this is especially true of the first claim. The important part of the specification is as follows:

“My invention relates to that class of locks in which, for economy of construction and convenience in use, the keys are made of thin sheet-metal; and it consists, particularly, of an improved construction of the key and its hub or trunnion, so as to increase the safety

of the lock against picking, and so, also, as to admit of the key being wholly formed of a single piece of thin sheet-metal, and yet insuring its thorough guiding and support during its insertion and rotation. My invention applies particularly to locks operated by sheetmetal

keys, and provided with rotating plugs, or roll-backs, for guiding the key, and supporting it during its revolution to operate the lock. The locks to which my invention relates may be also provided with key-hole escutcheons, as hereinafter described. The objects of my invention are to obviate a great difficulty which has been found with flat keys, viz., the tilting of the key, and also to increase the difficulty of picking the lock. In the old forms of locks the keys rotate on round stems in suitable round bearings in the front and back plates of the lock. If a flat key is used, it is necessary to provide some device to guide it during its insertion, and to support it during its rotation. The device usually employed has been a hub or trunnion, which has been fitted in the bearing formerly used for the round-stemmed keys. In this plug has been cut a straight slot or key-way, into which the key could be inserted, and, the key being in place, the key and hub would revolve together, so that the bits of the key could operate the tumblers. The difficulty of this construction is that it offers inadequate resistance to the tilting of the key; that is, to its vibrating on an axis at right angles to the length of the key. The result of this tendency to tilt is twofold: *First*, it prevents the easy insertion of the key into the lock; and, *second*, it allows the key to get out of place during its rotation, and thus either stick, or perhaps fail entirely to operate the lock. In my patent No. 111, 732 I have shown a key provided with a laterally-projecting rib, which, in connection with the hub therein shown, will obviate the difficulty of tilting, above pointed out. This construction, however, while effectively remedying the difficulty of tilting, adds nothing to the security of the lock against picking, and practically precludes the use of sheet-metal in the construction of keys, because a rectangular key-bit, having a rib projecting out from one side of it, with no corresponding depression on the opposite side of the bit, cannot economically be made of thin sheet-metal, if it can be made of it at all. My present invention enables me to construct a key entirely of sheet metal, and yet provided with longitudinal grooves and ribs or sinuosities, whereby the sheet-metal key is effectively guided in the lock during insertion and rotation, the security of the lock is increased by the obstacles presented to the introduction of picking tools; and these advantages are obtained without materially increasing the cost of this sheet-metal key beyond that of others of the ordinary flat form. The ordinary method of picking locks is by the insertion of a picking tool, which is placed against the tumblers. The tool is then tilted up and down, retractive pressure at the same time being kept on the bolt, the tumblers being finally adjusted by this tentative process until the bolt can be retracted. It is evident that if any obstruction is made to this tilting of a picking tool, the difficulty of picking will be increased, and my invention increases this difficulty by making the key-way in the plug of a sinuous or contracted form. Such a novel form of key-way in a slotted rotary key-hub, of course calls for a corresponding sinuously-shaped key of like wavy outline on its opposite sides, and such a key is much stronger and better in every respect than the ordinary flat plate-key. * * *

"Figs. 3, 8, 11, and 12 show a modified application of my invention, which consists of forming the key of thin sheet-metal, in the ordinary way, and in subsequently milling, or otherwise cutting a longitudinal groove or depression in both of its sides. In this case, the hub or trunnion has a corresponding rib or projection on both of its inner walls, thus forming a key-way of a cross-section coincident with that of the key. This construction, and that shown by Fig. 22, although accomplishing the desired results in some measure, does so at a greater cost of manufacture, and at the expense of weakening the key, and is therefore less desirable than those forms which are more properly termed 'sinuous,' and which preserve the parallelism of the sides of the key and key-way. * * * I am aware that a key-blade of angular zigzag outline has heretofore been made, as in the patent of Holmes and Butler; but

that key is what is known as a 'push-key,' *i. e.*, the moment the key is pushed into place the lock may be unlocked without rotating the key. The result is that, in this class of locks, picking tools do not have to be tilted to effect the desired object, and therefore corrugations are not safeguards. Moreover, the Holmes and Butler key is bitted upon its end, and is not made complete of a single piece of sheet-metal. * * * It will be perceived that my invention does not contemplate the use of a flat, rectangular key-blade, having a mere lateral rib or projection from one or both of its sides, because that would not accomplish two very useful objects desirable to be attained in connection with my present invention, as above stated, viz., to prevent picking, and to cheaply and easily manufacture a parallel-sided plate-key of equal thickness throughout, and of greater strength than other parallel-sided plate-keys for rotary locks. I only use ribs upon my key where the forming of grooves by depression necessarily causes them; the essential thing being to obtain a key and a key-hole of sinuous contour, as best illustrated in Figs. 6 and 9 and 18 and 19, and to combine the advantages of these with a rotating key, and thus improve the generally preferred class of locks operated by rotary keys.

"In my said patent No. 111, 732, Fig. 8 shows a rectangular plate-key, with a rib projecting from one side of its blade, and Fig. 9 shows a corresponding rectangular key-hole, with a recess in one of its sides, to accommodate the rib. The only purpose of this rib and recess is to aid in guiding and securing the key in position in the lock. It does not at all tend to prevent picking. I do not claim in this application, or intend, that it shall reach a merely ribbed plate-key, such as my said patent discloses. I do not broadly claim a key with projections or depressions upon its side or sides, or broadly claim a slotted rotary key-hub; but what I do claim is: (1) A flat or sheet-metal rotating key complete of a single piece of metal of uniform thickness, with one or more longitudinal grooves on one side, and corresponding ribs on the other, substantially as described, and adapted to be bitted transversely to said grooves and ribs. (2) In a lock, a rotating hub or trunnion, provided with a sinuous key-slot adapted to the use of a sinuous sheet-metal key, bitted on one side, the sides of the slot being parallel to each other, as described. (3) A key-hole escutcheon, with a revolving disk, in which is cut a key-hole of sinuous shape and parallel sides, substantially as described. (4) In a lock, the combination of a flat or sheet-metal key complete of one piece of metal, whose sides are parallel, and of which a cross-section is sinuous, with a hub or trunnion, provided with a key-way of the same form as the key. (5) The combination of a plate-key complete of a single piece of metal, of sinuous cross-section, and of uniform thickness, a hub provided with a key-way of a shape corresponding to the key, and tumblers, which are operated by the rotation of the key, substantially as described."

The first, second, and fourth claims are the only ones which are alleged to have been infringed by the defendant, The Dickerman lock of 1871, shown in his patent No. 111,

732, was a night lock, operated by a flat key, and provided with a rotating plug or hub, into which the shaft of the key is passed, and which rotates as the key is revolved. The key had a longitudinal rib or projection upon one side, and was adapted to be bitted transversely to this projection, and to operate upon tumblers, and move the bolt when rotated. The key-hole had a groove, which corresponded with the projection upon the key. The Holmes & Butler lock had an angular key-hole, and a fiat metal corrugated or grooved and ribbed "push" key, which was adapted to the angularities of the key-hole. For the purpose of fully stating the development

of the art at the date of the Dickerman invention, it may be added that the locks of the Stephenson patent of 1848, and of the Garruchon patent of 1858, each had rotating hubs, zigzag or sinuous key-ways, into which the correspondingly shaped wing of a round-stemmed key entered; but the key-holes, or the rotating hubs, were only obstructed at the wing-way of the key, and the round stem of the key “centered” the key as in the old and customary method. It will thus be seen that the Dickerman hub of the patent of 1880 was the hub of his patent of 1871, with the addition of the ribs in the hub, so arranged with grooves as to give to the key-way such a shape that it can properly be termed “sinuous,” and which fit into corresponding longitudinal grooves upon the key. The corrugations upon the key, and the corresponding shape of the key-hole, are the same as the corrugations and the shape in the Holmes & Butler push key. The object of the addition to the Dickerman hub and key of 1871 was to obstruct or prevent picking. The patent of 1880 is commercially valuable, and describes an important improvement upon the well-known “Security” Yale lock. The principal part of the invention, being the portion included in the second, fourth, and fifth claims, consisted in making the key-way in the rotating hub, which is to receive the shaft of the key, sinuous, and making the key to correspond with the key-way; in other words, the combination which is distinctly described in the second claim, of sinuous parallel-sided key-way in the hub, and corrugated flat metal key. It did not consist in a sinuous key-hole, which existed in the Holmes & Butler lock, but it was limited to a key-slot or key-way, the sides of which were parallel to each other. Neither did the invention consist, so far as the key of the first claim is concerned, in any corrugated and grooved flat metal rotating key, which was bitted transversely to the ribs, or the ribbed key of 1871, plus the grooves of Holmes & Butler. Such a key could have little claim to patentable novelty. The key of the first claim, as the result of the struggle on the part of the patent-office to reject the application entirely, was limited to a key of a single piece of metal of uniform thickness, with one or more longitudinal grooves on one side, and corresponding ribs on the other. The second claim does not require that the sinuous key-way, grooved through the hub, must necessarily be combined with a key which possesses all the limitations of the first claim.

The defendant's lock is a pin-tumbler lock, with a rotating hub. The key has two longitudinal grooves upon one side, and one longitudinal groove upon the other side, and is transversely bitted. These grooves are made by milling, and have no corresponding ribs or projections, caused by the formation of the grooves, upon the side directly opposite them. The cylinder of the lock has a thin piece of metal at the front, which contains an angular key-hole. The remaining portion of the slot, and the portion which extends within the lock-plates, is plain and smooth-sided. The slotted plate will not seriously obstruct picking. The means which are relied upon for this purpose are contained in another part

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of the lock. The key is not an infringement of the first claim, which required that the key must be, when completed, of uniform thickness; that is, the

depressions on one side must have a corresponding rib on the other side, and the uniform thickness must thus be preserved. The key must be as thick where the grooves are as in any other part; and where there are no grooves it must be no thicker than in any other part. The defendant's key is not of uniform, but of varying, thickness, because it has no ribs on one side which correspond with the grooves on the other side. The ungrooved portions are about twice as thick as the grooved portions. The defendant's lock does not infringe the second and fourth claims, because each claim requires that the rotary hub should be provided with a sinuous key-slot or key-way, which demands more than a mere sinuous or angular key-hole, without parallelism in the sides of the slot through the hub. An angular or sinuous key-hole which is the entrance to a plain straight slot cannot justly be included in the second and fourth claims of the patent.

The object of the Taylor patent was, in the language of his specification, "to form in a cheap and simple manner a key-hub or cylinder, with an angular, curved, or sinuous slot, such as is used in connection with a longitudinally grooved or corrugated sheet-metal key, having side-bits or serrations, like the well-known 'Security' Yale lock key." The patentee further says:

"My invention consists in forming such a key-hub wholly or in part of a series of corresponding disks, suitably slotted. One method I adopt in carrying out my invention is to take a number of these disks and lay one upon another, with their slots coincident, until a pile is formed of a height equal to the desired length of the hub, and then secure them all together by one or more longitudinal rivets, or by any other well-known mechanical means. I thus obtain a cylinder with a longitudinal, sinuous, or angular slot that will fit a suitable-shaped sheet-metal key on each side of its blade at all points, when it is inserted in place; but it is not essential that the side walls of the slot shall impinge against the sides of the key-blade at all points; and hence I may, without departing from my invention, or detracting from the value of my cylinder, form it in sections, only part of which are correspondingly sinuously-slotted disks, and the rest of which are rectangularly-slotted parts, or half-cylindrical blocks, or other shaped filling pieces, sufficiently cut away to leave an open path for the key, and serving merely to connect the coincident disks, and help form the body of the hub, which, when in place in a lock, is out of sight, except its front end. Such a formation of the hub will give a sufficient fitting sinuous-bearing surface to guide the key during its insertion, and to be acted upon in turning it for the operation of the lock."

The utility of the invention consists in the economy and rapidity with which longitudinally and sinuously slotted lock-hubs can be made by its means, instead of by cutting the slots in solid cylinders. The claim of the patent is for "a key-hub, composed in whole or in part of sinuously or angularly slotted disks, substantially as described." Inasmuch as the, defendant's key-hub has merely a plate in which is an angular key-hole as the entrance

way to a smooth slot, it is plain that it is not, in any proper sense, the sinuously or angularly slotted key-hub of the claim.

The claims of the Towne patent are as follows:

“(1) The combination, substantially as set forth, of the bolts, the slide, or plate, moving at a right angle thereto, and the pivotal links for guiding said

slide; the combination being such that vertical motion of the slide shall cause a simultaneous horizontal motion of the bolt. (2) In a mortice lock, the mechanism of which to be operated upon by the key is contained within one or two separate tumbler-cases or escutcheons, adapted to be secured to the lock-case after the latter has been morticed into the door, a set or slide contained within said lock-case, and controllable only when the door is open, which set or slide is adapted to suitably engage with either one or both of said escutcheons, inserted through either or both sides of the door, and to prevent the withdrawal of said escutcheons from the lock-case. (8) The combination, substantially as set forth, of the slide H, adapted to engage with one or more escutcheons or tumbler-cases, and to prevent the withdrawal of the latter from the lock-case, and the operating-screw, J, inaccessible when the door on which the lock is used is closed. (4) The slide, or Bet H, provided with two wings or projections, *h, h*, and adapted to engage, as desired, with either one or two escutcheons or tumbler-cases inserted from one or both sides of the case of a mortice lock."

It is admitted that the first claim is not infringed, and that the other claims are not infringed by the slides which the defendant now uses, and that it did make a few locks which infringed those claims. The defendant denies that the improvement which they describe was a patentable invention. In view of the Yale and Winn patents, which are relied upon by the defendant as disclosing the prior state of the art, I think that there was invention on the part of the patentee, as distinguished from mechanical skill. Let there be a decree for an injunction, and for an accounting for the infringement, by the use of the "Complainant's Exhibit, Defendant Lock," of the second, third, and fourth claims of the Towne patent. The bill is dismissed as to the Dickerman and Taylor patents. The questions in regard to costs will be reserved until the final decree.