

Case No. 18,123. YALE & G. MANUF'G CO. ET AL. V. NORTH.

[5 Blatchf. 455; 3 Fish. Pat. Cas. 279.]¹

Circuit Court, D. Connecticut.

Sept. 17, 1867.

PATENTS FOR INTENTIONS—COMBINATION LOCKS—CONSTRUCTION OF CLAIMS.

1. The two different classes of combination locks, explained.
 2. In the reissued patent granted to Linus Yale, Jr., April 28th, 1863, for an “improvement in locks,” the second claim, which is: “In combination with a pack or series of tumblers set separately and in succession, I claim a vibrating fence and a bolt, and a proper stop against which the fence may abut, the whole being and operating substantially as set forth,” is applicable only to the class of locks in which the tumblers are set separately and in succession, under the exclusive control of the operator, and subject to his discretion, as distinguished from the class of locks in which the tumblers are all set at one time, by fixed mechanism.
 3. The nature of the invention covered by said second claim, defined.
 4. Such invention was new with the patentee, and the said reissued patent is valid.
- [Cited in brief in Locomotive Engine Safety Truck Co. v. Pennsylvania R. Co., Case No. 8,453.]
5. The combination covered by said second claim is a combination of the bolt, the vibrating fence, the stop and the tumblers.
 6. Such claim is not invalidated by the prior existence of a combination in which the tumblers were set at the same time, by fixed mechanism.
 7. Where a defendant, in a suit in equity, was held to have infringed one claim of a patent, and another claim of the patent was held not to have been new, no costs were allowed to either party.
 8. A reference being made to a master to take an account, an injunction was withheld until the coming in of his report.

² [This was a bill in equity filed to restrain defendant [Frederick H. North] from infringing letters patent [No. 32,331] for “improvement in locks,” granted to Linus Yale, Jr., May 14, 1861, and reissued to him April 28, 1863 [No. 1,470], the sole and exclusive right to the use of which was granted to the Yale and Greenleaf Manufacturing Company, September 21, 1861.

[The claims of the original patent were as follows: “1. The piece E (key) or its equivalent used in the manner, or an equivalent manner, and for the purpose substantially as described. 2. The parts D, D. D, D (tumblers), or their equivalents, receiving motion in the manner substantially as described. 3. The piece C (fence) or its equivalent, with its arm g, for the purpose and object described.”

[The specification of the reissued patent was as follows: “Be it known, that I, Linus Yale, Jr., formerly of Philadelphia, but now residing at Shelburne Falls, Massachusetts, have invented certain new and useful improvements in that class of locks in which each tumbler is set separately to its proper position by a key, or its equivalent, or by hand as in alphabetical or index locks, as distinguished from or contrasted with that class of locks

in which all the tumblers are set at one time, or nearly so, by the action of a key or bit, and I declare the following to be a full, clear, and exact "description of my improvements, reference being had to the drawings, in which: Figure 1 is an elevation of the lock, one side of the case being removed. Figure 2 is a section through the lock on the line x y of figure 1. Figure 3 is a section through the key curb. Figure 4 is a detail view of the bolt and bolt-lever or keeper. Figure 5 is a plan of one of the washers. In this lock I have introduced several improvements, the principal ones relating first to the method of operating the tumblers, and, secondly to the method of preventing picking. In this class of locks difficulty is often experienced in setting the tumblers; imperfect sight of the operator, or want of light, or a wrong position of the eye, preventing the indices usually employed from being brought to the exact spot* which they must assume before the tumblers are adjusted, and the lock can be unlocked. In order to obviate this defect I have combined a tumbler with a revolving tooth on a separate shaft, the combination being such that a whole revolution of a tooth moves the tumbler only through the angular distance between two of its consecutive notches. Locks of this class have also been picked by new processes impossible to describe fully except in a specification of inordinate length, but depending for their success upon distinguishing one tumbler from the others, and the difference between false and true notches, or either of them, by forcing the stump against the tumblers, and noting the position of an index attached to the instrument, whatever it may be, that retracts or tends to retract the bolt, and I

have remedied this defect in this class of locks, by combining with tumblers, set or adjusted separately and in succession, a bolt and vibrating stump or fence attached thereto, said fence acting to stop the motion of the bolt at one and the same point irrespective of the precise tumbler or precise notch of a tumbler against which the stump is forced. In this lock the bolt is shown at B, and is guided as usual by the gate in the rim, and by two pins a₁, a₂. In the bolt is an aperture, b, permitting it to slide past the post a. The post a is strongly secured to, or made in one piece with the lock-plate A, and is a cylinder with one side flattened; this flattening is merely to prevent the washers 1, 2, 3, 4 from revolving. Upon the post are packed the tumblers D, D, D, free to revolve thereon, and between the tumblers are the washers, the whole pack of washers and tumblers being held in place by a stout washer H, secured by a spring ring I taking into a groove on top of the post. These tumblers are gated or deeply notched as at d, for the entrance of the stump, and have also false notches surrounding them as at 1, 2, 3, etc. Such notches also serving as cog-teeth, by means of which each tumbler can be revolved. These notches extend all around the tumblers, except at one spot, as at d", where their original rim is left uncut, so as to secure a point of departure from which to count the position of the stump notch when the tumblers are revolved. The bolt has pivoted to it at b₄ an ordinary guard tumbler G, held in abutment against the pin a₂, which serves as a stop for this tumbler. Upon the bolt B and b₂ is the vibrating safety fence part of this fence at c serves as an ordinary stump, and inserted in the bolt is a spring-pin b₅, which bears against the stump and holds its end g out of contact with the top a if the lock is put on the door with the side at x upward this pin is unnecessary, as the force of gravity will then keep the end g depressed. Near the tumblers is secured in the lock the key curb F, free to revolve and bored out and slotted from end to end, for the passage of the revolving tooth which sets the tumblers and also serves as a bolt mover; the shape of this tooth and its shaft are clearly shown in the drawings, and on its shaft are turned a series of grooves whose distance from center to center is the same with that of the tumblers, and into these grooves takes a spring-pin attached to the curb, and clearly shown in fig. 3. This pin permits the key to be shoved out and in within the case of the lock, and serves to determine the position of the tooth, so that the tumbler upon which it is acting may be known. The distances between the true notches or gates into which the bolt stump must enter before the lock can be unlocked, and the blank spot on the periphery of the tumblers, varying in each tumbler, and the number of tumblers may vary from two upward. In order to unlock the lock, one of the tumblers is to be turned by the revolving tooth operated by the crank until the blank is felt; when the tooth strikes the blank, further revolution in the same direction is impossible. The key is then to be shoved in or pulled out and another tumbler set in the same way until all the blanks lie over each other, then by acting on each tumbler separately, each one is to be revolved by the crank and tooth until the gate or true notch

comes opposite the stump on the bolt; the necessary amount of revolution being known and depending upon the construction of each tumbler, or, in other words, the number of notches between the blank spot and the true gate. The key is then shoved in and turned so as to lift the guard tumblers; hold it lifted; take into the talons and retract the bolt; in so doing the stump c will enter the true notches. Now, it will be noted that each tumbler is moved separately, and when adjusted remains in the position for the stump to enter without being held in place by the key, thus differing from that class of locks in which the tumblers are lifted all at once and held in position by a key or bits while the lock bolt is being retracted. It will also be observed that a whole revolution of the crank and tooth only turns each tumbler one notch, no index on the crank is therefore needed, all that is necessary being to count the turns of the crank, and it makes no difference whether the crank commences to turn from a precise spot or finishes its revolution at a precise spot, so long as it moves through such a portion of a revolution as will turn the tumbler upon which it is acting through the angular distance between two notches.

{“This arrangement therefore dispenses with indices, permits opening of the door in the dark as well as in the light, and obviates the difficulties arising from imperfect vision, or false position of the eye of the operator. In case a lock is attempted to be opened by a person not knowing the true set of the tumblers and the relative angular position between the blanks” and the true notches, he must endeavor to set the tumblers experimentally, and then ascertain whether their arrangement is correct by forcing the bolt backward; when he does so, the stump as soon as it touches any tumbler will compress the spring and locate its long end (the fence) against the stop a thus preventing the bolt from retracting further, and always bringing it up against the stop a and at exactly the same point of retraction, no matter what tumbler or part of a tumbler it touches. This peculiarity of the sameness of range of motion of the bolt when forced back effectually prevents a lockpicker from distinguishing between the different tumblers, or discovering their true set, or that arrangement of the gates which will alone permit the bolt to be retracted.

In locking, the bolt is to be shot, and the tumblers are then, by means of the tooth, to be moved so that their true notches are no longer opposite the stump. I claim as of my own invention:

{“First. The combination of a revolving tumbler with a revolving tooth; the two being relatively arranged so that a revolution of the latter moves the former only through the angular distance from one of its teeth to the next in succession, the combination being substantially such as described.

{“Second. In combination with a pack or series of tumblers set separately and in succession, I claim a vibrating fence and a bolt, and a proper stop against which the fence may abut, the whole being and operating substantially as set forth; and, lastly, I claim in combination a revolving tooth, a pack or series of tumblers, a vibrating fence and a bolt, the whole operating substantially as herein before specified.

{“In testimony whereof, I have hereunto subscribed my name on this seventeenth day of March, A. D. 1863. Linus Yale, Jr.”³

C. M. Keller and E. W. Stoughton, for complainants.

George Gifford, for defendant.

SHIPMAN, District Judge. [This is a bill for an injunction to restrain the respondent from infringing certain alleged rights of the complainants, and is founded upon a reissued patent numbered 1,470, granted to one of the complainants, Linus Yale, Jr., and dated April 28, 1863. The other complainants, the Yale & Greenleaf Manufacturing Company, are the sole and exclusive licensees of Linus Yale, Jr., under this patent. The patent is for an alleged new and useful improvement in locks, and embraces three claims.]³

Of the three claims in this patent only two are involved in the present controversy, and the main struggle between the parties relates to the second. The object of the alleged invention, embraced in this second claim, is declared, in the body of the specification, to be, to prevent the picking of the lock. This claim is stated in the following language: “In combination with a pack or series of tumblers, set separately and in succession, I claim a vibrating fence and a bolt, and a proper stop against which the fence may abut, the whole being and operating substantially as set forth.”

The specification, in describing the state of the art at the date of the invention, and the alleged improvements made by the patentee, distinguishes combination locks as capable of being separated into two classes—the first class embracing those “locks in which each tumbler is set separately, in its proper position, by a key or its equivalent, or by band, as in alphabetical or index locks;” and the second class embracing those “locks in which all the tumblers are set at one time, or nearly so, by the action of a key or bit.” It is to the first class only that the alleged improvements of the patentee are declared to be applicable. This distinction between these two classes of locks has an important bearing on the main question to be determined in this case. It is set forth in the specification, and was

insisted on by the plaintiffs, at the hearing, for the purpose of marking the line of separation between what is alleged to be a new combination and what is admitted to be old. The novelty of the invention embraced in the second claim depends, therefore, upon the verity and validity of this distinction, as will be seen hereafter. Whether the combination described in the second claim is patentable, when considered apart from this question of novelty, is another and different matter, and will be discussed when we consider that point as separately presented by the defendant.

Locks, in their ordinary construction and use, are susceptible of being plainly separated into two classes. One class, which, for convenience, we will continue to denominate the first, is that in which the tumblers are so constructed and arranged that they are set separately and in succession, by bringing the gates of the tumblers, one by one, from different points, into a line, for the fence to enter, so that the bolt may be retracted. This setting of the tumblers separately, for the retraction of the bolt, presupposes, of course, that the tumblers have been disarranged after locking, upon a combination fixed by, and known to, the locker. Having thrown forward the bolt and disarranged the tumblers to a selected combination, the locking is complete, and, whatever security the mechanism affords against illicit opening is attained. By reversing the motion of the tumblers exactly according to the same combination, the gates are all brought again in a one with the fence, and the bolt can be retracted. In this class of locks the key-hole is dispensed with. No aperture is left in the case, through which the lock can be picked with an instrument, or into which explosive substances for blowing it open, or coloring matter for taking an impression of its internal structure, can be passed. There is no key to be lost or duplicated. In this class of locks, the tumblers may be said to be passive, and move through a wide range of motion, operated by a locking instrument, or the human hand, uncontrolled by springs or catches. The operator disarranges and sets or rearranges them, according to a combination formed in his own mind, and by his own discretion.

The second class of locks is operated by a key or bit passed through a key-hole in the lock case. This key takes up the tumblers simultaneously, or nearly so, in a mass, and carries them forward to a common point, where the fence can enter the gates, and the bolt be thrown forward or retracted, when the key is withdrawn from pressing against

the tumblers, and the latter, by force of gravity or springs, are carried back to their original positions. The tumblers are carried forward to one fixed point by force of the operating hand, and return to the other fixed point by force of gravity or springs. All this is done, not in accordance with a rule originating and resting in the mind of the operator alone, but in accordance with a fixed rule resting in and limited by the mechanism. By this rigid mechanical law, the tumblers are both set and disarranged. The discretion or intelligence of the operator cannot vary the operation of the lock, except by changing the wards of the locking instrument to a different combination. The lock is more or less accessible through the hole in the case or door. Through this aperture, picking instruments can be introduced by the thief, or explosive materials for blowing it off, or coloring or plastic matter for the purpose of obtaining an impression of its internal construction or condition.

In the first class of locks, all these means of illicit access and information are cut off, by dispensing with the key-hole, and setting the tumblers separately, each one by itself, and distributing the gates upon a combination resting wholly in the knowledge and discretion of the operator, and not in the mechanism of the lock or key. Tumblers of this character are different mechanical devices or instruments from those of the second class, and accomplish very different and more complete results. They are flexible and obedient servants of secrecy and intelligence, upon which the security of locks greatly depends. These tumblers, combined with various other parts of locks, are old and well known. Their introduction formed an important era in this branch of invention. But, while they dispensed with the key-hole and removable key, and thus got rid of several means through which the bolt could be illicitly reached and controlled, it is said that they did not always baffle the thief, and that he could still communicate with, and draw information from, the interior of the lock, by the sense of feeling applied directly to the tumblers, or indirectly through the parts of the lock which communicated with the bolt and tumblers. Even where the hand of the burglar, however practised and sensitive, applied to the instrument for retracting the bolt, could detect no variations in the tumblers, and, therefore, could not bring the gates into line and present them to the fence, it is said that a delicate instrument, capable of measuring minute variations, could be attached to the part where the force was to be applied for moving the bolt, and thus the position of each notch or gate could be made known, and brought to the place necessary in order to free the bolt, and enable the operator to throw it back. It is obvious that, to overcome this defect, the tumblers, when any attempt is made to feel out their positions, must be isolated from all those parts of the locks which have any connection, either directly or indirectly, with the hand of the thief, or to which a measuring instrument can be applied. The parts, or connection of parts, through which intelligence of the position of the notches in the tumblers is communicated to the operator outside, must be cut somewhere. To accomplish this was the object of the combination described in the second claim of the patent in question. The patentee

combined this class of tumblers with a vibrating fence, a bolt, and a stop against which one arm of the fence strikes when an attempt is made to retract the bolt. After the bolt is thrown forward, and the tumblers are disarranged, and the locking is thus completed, an attempt to retract the bolt brings one arm of the fence against the edge of the tumblers, and throws the other arm in a line with and against the stop, always at the same point of retraction. This retracting pressure on the bolt, by which one end of the vibrating fence is brought against the stop, relieves the pressure of the other end of the vibrating fence on the edge of the tumblers. The absence of pressure, and the uniformity of the range of motion of the bolt each time it is attempted to be thrown back, prevents the operator from distinguishing one tumbler from another, or discovering their set, or the relation of one gate to the other. He has, therefore, nothing left to guide his efforts to bring the gates in line, so that the fence will enter and the bolt pass back to its unlocked position. After the bolt is thrown forward, and the tumblers are disarranged to a combination existing only in the mind of the locker, every effort of a stranger must result only in retracting the bolt through uniform motions fixed by the stop, against which one arm of the fence abuts. No pressure can aid him in his attempts to distinguish the tumblers, for the fence conveys no information either to the hand or to a measuring instrument, as to the position of any one tumbler, or its relations to the rest, or the relative positions of any one or of the whole to the point to which all must come, in order to effectually throw back the bolt.

The proofs do not show that this combination of the vibrating fence, bolt, and stop with this class of tumblers was ever made until it was done by this patentee. Locks with this class of tumblers, having various combinations and devices intended to baffle the thief, are numerous. To describe and discuss these would prolong this opinion and shed no light on the vital point of this controversy, for, in none of them is found this simple combination of the tumblers, fence, bolt and stop, so arranged as to check the backward motion of the bolt and isolate the tumblers at the same time, and thus protect the tumblers from any adjustment by a stranger that would enable him to pick the lock.

On the question of the discrimination of tumblers into two classes, as set forth in the patent, proof was introduced by the defendant, which he claimed was evidence that no such classification could be properly made. By an ingeniously constructed key, for locking and unlocking tumblers of the second class, these tumblers were picked up separately, one by one, and carried to the point where the bolt could be thrown forward and retracted, and held there by the key. It was insisted, that the success of this experiment demonstrated that the tumblers of these locks could be set separately and in succession, and therefore, that the distinction which was attempted to be made in the different classes of tumblers, in this particular, was purely imaginary. The true answer to this is to be found in the fact, that the terms "set separately and in succession," as used in the second claim of the patent, as well as similar words in the body of the specification, refer not merely to their separate and successive movement, but to their separate movement and adjustment under the exclusive control of the operator—to combinations resting entirely in his own discretion. The tumblers that are distinguished from these, in the specification, are those which are controlled in their movements, not by the mere discretion of the locker, but by the law of their mechanism.

Experiments were also performed to show that the tumblers on the plaintiffs' lock, could, from a certain point, be thrown forward and set simultaneously. But they had to be picked up first separately and carried to a given point, before the mass could be operated upon simultaneously. In practical use, one class have always been set simultaneously, and the other separately, and the descriptive terms of the patent followed the language which naturally had grown out of that use. The ingenious experiments here referred to do not change the nature or functions of the different species of tumblers, or obliterate the distinctions which legitimately pertain to them.

It was insisted, on the hearing, that the reissued patent was false and fraudulent and improperly issued. But, no such issue is raised by the pleadings, nor is there anything in the proofs that would warrant the court in sustaining such an objection.

A more important point urged by the defence, and one directly involved, is that which relates to the construction of the second claim of this patent. It is insisted, that this claim purports to be for a combination of mechanism for preventing the picking of a lock, with the fact, or act, or means of setting the tumblers. If the claim were to receive this construction, it would fail, for it would be an absurdity. The manner of setting the tumblers can form no part of the combination. A combination in mechanism must consist of distinct mechanical parts, having some relation to each other, and each having some function in the organism. The combination embraced in this claim consists of the bolt, vibrating fence, stop and tumblers. These four distinct parts are brought together and into proper relation to each other, for the purpose of attaining more perfect security against any illicit opening of the lock.

But, it is claimed that this construction destroys the patent, because this combination was made in the Edwards and Stephenson locks, long before the alleged date of Yale's invention. This would be a conclusive answer to the suit were not the tumblers in the Edwards and Stephenson locks a different mechanical device from those in the locks of the patentee and of the defendant. The defendant insists, that the only difference is in the mere fact, that in one they are all set at the same time, or nearly the same time, and in the other they are set one by one. But, as already intimated, these two classes of tumblers are constructed and operate upon different principles, and reach very different results. One is constructed to, and does, operate only upon fixed mechanical laws, limited and controlled by mechanical devices. The other is made to operate at the discretion of the locker, and thus become the secret instrument of his intelligence, controlled alone by his will and purpose. The latter are, therefore, sufficiently unlike the former to form a novel element in a combination, where they are introduced into that combination for the first time.

The proofs show that Yale was the first to combine such a pack of tumblers with a bolt, vibrating fence, and stop for the fence to abut against, substantially as set forth in his patent. This combination is found in the defendant's lock. It has these four elements in the same combination. It has, also, a different and much more perfect mechanism for setting the tumblers and throwing the bolt. Indeed, the lock of the defendant is, in every way, a much superior piece of mechanism to that of the plaintiffs, but, as it embraces the precise combination first introduced by Yale, it is an infringement of his second claim.

As to the first claim of the plaintiffs' patent, it cannot be sustained, in its present form at least, for the same combination is found in the prior patent of Isham. A decree must, therefore, be rendered for the defendant on this issue.

As there is to be a decree in favor of each party on one issue, no costs will be allowed to either party. An account being prayed for, there will be a reference to a master to take proofs and report the amount which the plaintiffs are entitled to recover. The decree for an injunction will be withheld till the coming in of the master's report.

¹ [Reported by Hon. Samuel Blatchford, District Judge, and by Samuel S. Fisher, Esq., and here compiled and reprinted by permission. The syllabus and opinion are from 5 Blatchf. 455, and the statement is from 3 Fish. Pat. Cas. 279.]

² [From 3 Fish. Pat. Cas. 279.]

³ [From 3 Fish. Pat. Cas. 279.]