Nettlefold's Lever

Syd Waterman … 2020

The term "Nettlefold's Patent" refers to the lever design, invented by Charles Aubin and patented by the Nettlefold family members - June 9th, 1855, No 1315.

The design incorporated the lever and spring making it out of one piece of metal.

The Nettlefold family financed and set up Charles Aubin as the manager of the Guardian Lock works.

Following the expiration of the patent numerous manufacturers used the Integral lever design in their products.

A.D. 1855 . . . . . N° 1315.

Locks.

LETTERS PATENT to John Sutton Nettlefold, Edward John Nettlefold, and Joseph Henry Nettlefold, of Holborn, in the County of Middlesex, for the Invention of "IMPROVEMENTS IN LOCKS."—A communication.

Sealed the 7th August 1855, and dated the 9th June 1855.

PROVISIONAL SPECIFICATION left by the said John Sutton Nettlefold, Edward John Nettlefold, and Joseph Henry Nettlefold at the Office of the Commissioners of Patents, with their Petition, on the 9th June 1855.

We, JOHN SUTTON NETTLEFOLD, EDWARD JOHN NETTLEFOLD, and JOSEPH HENRY NETTLEFOLD, of Holborn, in the County of Middlesex, do hereby declare the nature of the Invention for "IMPROVEMENTS IN LOCKS" to be as follows:—

These improvements are shown in the accompanying sketches:—

Figure 1 shews an improved mode of moving the bolt by means of a sliding plate *a*, having an inclined slot *b*, in which a stud *c* in the bolt works for flush-bolt desk or pianoforte locks.

Figure 2 shews the application of an oscillating tumbler *a* (attached to the bolt *b*), having an inclined slot *c* for moving the bolt.

Figure 3 shews an improvement in the construction of tumblers, in which the spring *a* is made of one and the same piece of metal as the tumbler *b*.

Figure 4 shews the application to locks of an expanding stump, which holds the levers when end pressure is applied to the bolt. The stump is formed of

a fixed part *a*, and of a moveable part *b*, turning upon a pin, and upon pressure being applied to the bolt the inclined face of the piece *b* is forced against an incline upon the lever *c*, and upon attempting to raise the lever the piece *b* is raised and prevented from entering the notch in the lever. This stump may be made fast or loose by fitting it on a loose plate, either on the top of the bolt or under it, the plate being attached to the bolt and moving with it.

Figure 5 shews the application of a double stump to counteract the effect of end pressure upon the bolt. *a* and *b* are two moveable discs, which move together by a stud in the one working in the slot in the other. The disc *a* has a pin or stump *c* in its face, and the disc has a stump *d* placed excentrically on its face. When pressure is applied to the bolt, the lever *e* pressing upon the stump *d*, causes the discs to turn, and brings them into the position shewn, in which the stump *d* is raised, so that it cannot enter the notch in the tumbler, and the pin *c* enters a notch in the back of the bolt *e*.

Figure 6 shews the application to locks of a sliding shield *a*, to prevent access to the levers. The shield *a* is moved by the star wheel *b*, which is turned by a projecting stud in the bottom of the key.

Figure 7 represents the application of an expanding key chamber *a*, *a*, to keep the interior free from dust. The two pieces *a*, *a*, are kept closed by a spring *b*, but expanded, as shewn, when the key is turned. If it is required to render the lock powder-proof a sliding shield should be combined with it.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said John Sutton Nettlefold, Edward John Nettlefold, and Joseph Henry Nettlefold in the Great Seal Patent Office on the 8th December 1855.

TO ALL TO WHOM THESE PRESENTS SHALL COME, we, JOHN SUTTON NETTLEFOLD, EDWARD JOHN NETTLEFOLD, and JOSEPH HENRY NETTLEFOLD, of Holborn, in the County of Middlesex, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Ninth day of June, in the year of our Lord One thousand eight hundred and fifty-five, in the eighteenth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto us, the said John Sutton Nettlefold, Edward John Nettlefold, and Joseph Henry Nettlefold, Her special licence that we, the said John Sutton Nettlefold, Edward John Nettlefold, and Joseph Henry Nettlefold, our executors, administrators, and assigns, or such others as we, the said John Sutton Nettlefold, Edward

John Nettlefold, and Joseph Henry Nettlefold, our executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS IN LOCKS," (a communication,) upon the condition (amongst others) that we, the said John Sutton Nettlefold, Edward John Nettlefold, and Joseph Henry Nettlefold, by an instrument in writing under our hands and seals, or under the hand and seal of one of us, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Edward John Nettlefold, on behalf of myself and the said John Sutton Nettlefold and Joseph Henry Nettlefold, do hereby declare the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof, that is to say:—

The nature of our Invention, and the manner of carrying the same into effect, is ascertained and set forth in and by the following description thereof, reference being had to the Drawings hereunto annexed, and to the figures and letters marked thereon, observing, that where two or more views are given of one object, the same letters denote the same parts in each.

Figure 1 shews an elevation (with the cap plate removed) of an improved flush-bolt desk or pianoforte lock; and Figure 2 an elevation, with the plate *b* removed.

The improvement consists in the mode of shooting the bolt. *a* is the bolt; and *b*, a sliding plate, moveable by the key to and fro upon the guide pin *c*, *c*. In the plate is a diagonal slot *d*, through which passes a stud *e*, projecting from the face of the bolt *a*, or there may be two pins in the bolt, acted upon by two inclined planes on the opposite ends of the sliding plate *b*. The motion of the plate in one direction, acting by means of the slot upon the stud in the bolt, shoots out the bolt, and the motion in the opposite direction draws it back. The bolt is guided in its movement by the pin *i* working in the slot *k*.

We claim, in respect of this portion of our Invention, the moving the bolt by means of a diagonal slot, or two inclined planes in a sliding plate acting upon a stud or studs in the bolt.

Figure 3 shews an elevation of an improved flush-bolt desk or pianoforte lock (with the cap plate removed), in which motion is given to the bolt by

means of an oscillating tumbler; and Figure 4 is an elevation, with the tumbler removed. *a* is the bolt; and *b*, the tumbler, suspended at one end by the pin *c*, which projects from the bolt, and sustained at the other by the pin *d* in the case of the lock, which enters into one or other of the notches *e* or *f* in the tumbler; *g* is a spring acting upon the tumbler. In the action of shooting the bolt, the pin *d*, which was resting in the notch *e*, serves as a fulcrum to the tumbler, which, by the action of the key upon the curved face *h* of the tumbler, is elevated, and at the same time carried forward, carrying with it the bolt; and when the bolt is fully shot, the pin *d* will have passed into the notch *f*. The bolt is guided in its movement by the pin *i* working in the slot *k*.

We claim, in respect of this part of our Invention, the application to locks of an oscillating tumbler for moving the bolt, as above described.

Figure 5 represents an elevation of a lock (with the cap plate removed); and Figure 6 an elevation, with the tumbler removed, in which the improvement consists in making the tumbler *a* and the spring *b* in one and the same piece of metal; and we accordingly claim, in respect of this portion of our Invention, the forming the tumblers or levers and their springs in one and the same piece of metal.

Figure 7 shews an elevation of a lock, with the cap plate removed; and Figure 8 an elevation, with the tumbler removed, shewing the application to locks of an expanding stump, which holds the levers when end pressure is applied to the bolt. The stump is formed of a fixed piece *a* and of a moveable piece *b*, turning upon a pin or centre, having an incline upon its outer end. Upon end pressure being applied to the bolt *c*, the inclined face of the piece *b* is forced against an incline upon the end of the lever *d*, and upon attempting to raise the lever, the piece *b* becomes raised, and is thus prevented from entering the notch in the lever. Should a false key be introduced, it would raise the lever, which, acting upon the under side of the piece *b*, would raise it, and thus prevent its entering the notch.

We claim, in reference to this part of our Invention, the application to locks of an expanding stump, constructed as herein-before described.

Figures 9 and 10 shew a modification of the preceding stump; Figure 9 representing the lock with the cap plate removed; and Figure 10 representing it with the levers and plate *b* removed. *a* is the bolt, carrying a plate *b*, which turns upon a pin *c* in the bolt. In the plate *b* is a stud *d*, and in the top of the bolt is an inclined notch *e*, which receives it. Upon applying end pressure to the bolt, the inclined face of the notch *e* acting upon the stud *d* throws up the plate *b*, as shewn in Figure 9, and thus prevents the stump *f*, fixed to the plate *b*, from entering the notch *g* in the lever *h*.

We claim, in reference to this part of our Invention, the application to the bolts of locks of a hanging plate, carrying a stump and also a stud which enters an inclined notch in the bolt, so that when end pressure is applied to the bolt, the inclined face of the notch acting upon the stud throws up the hanging plate, and prevents the stump from entering the notch in the lever.

Figure 11 shews, in elevation (with the cap plate removed), the application of a double stump, to counteract the effect of end pressure upon the bolt; and Figure 12 shews the same, with the lever *e* removed. *a* and *b* are two moveable discs, which move together by means of a stud in the one working in a slot in the other. The disc *a* has a pin or stump *c* on its face, and the disc *b* has a stump *d* placed eccentrically across its face, the end of the stump *d* being formed as an incline, corresponding to an incline on the end of the lever *e*. When end pressure is applied to the bolt, the lever pressing upon the inclined end of the stump *d* throws it up, and prevents its entering into the notch in the lever, and at the same time brings the stump *c* into a notch *f* in the back of the bolt.

We claim, in reference to this portion of our Invention, the application to locks of two discs carrying two stumps acting upon the bolt, so as to prevent the stump on one of the discs from entering the notch in the lever, as herein-before described, when end pressure is applied to the bolt.

Figure 13 represents a lock (with the cap plate removed) having a sliding shield to prevent access to the levers; and Figure 14 represents the bolt removed to shew the shield more clearly. *a* is the shield, having the lower edge *b* turned up, so as to prevent a false key from getting access to the levers. This shield is moved a part of the distance by a stud in the bolt, and the remaining portion by the pinion *c* acting upon the studs *d*, *d*. The pinion is turned by a stud projecting from the bottom of the key, and entering the hole *e* in the pinion.

We claim, in reference to this portion of our Invention, the application of a sliding shield, operating as herein-before described, to prevent access to the levers by means of false keys.

Figures 15 and 16 represent the application of an expanding chamber to locks to protect the interior from dust; Figure 15 represents the lock with the cap removed; and Figure 16 shews the same with the levers removed. *a*, a^1, and *b*, b^1, are two hanging pieces, turning upon pins at *c*, *c*, and kept closed by springs *d*, *d*, as shewn in Figure 16, when the key is withdrawn, but expanding, as shown in Figure 15, when the key is turned. The parts a^1 and b^1 are of the same depth as the space between the front plate and the back plate of the lock, so as to fill up the same, and thereby to prevent the entry of dust. To protect

the tumblers from the action of gunpowder, a sliding shield, similar to that shown in Figures 13 and 14, may be combined with this lock.

We claim, in reference to this part of our Invention, the application to locks of two swinging pieces forming an expanding chamber, as herein-before described.

We would observe, in conclusion, that we do not limit ourselves to the precise details given in the foregoing description, as they may be variously modified without departing from the principle of the Invention.

In witness whereof, I, the said Edward John Nettlefold, have hereunto set my hand and seal, this Seventh day of December, in the year of our Lord One thousand eight hundred and fifty-five.

EDWARD JOHN NETTLEFOLD. (L.S.)

Witness,

LONDON:
Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1855.

A.D. 1855. JUNE 9. Nº 1315.

J S. E J. & J H. NETTLEFOLD'S PROVISIONAL SPECIFICATION.

(1 SHEET)

FIG. 1.

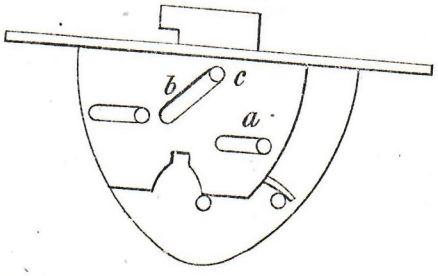


FIG. 4.

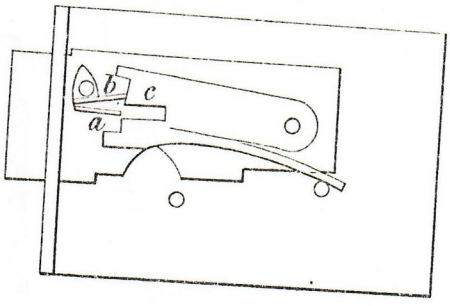


FIG. 3.

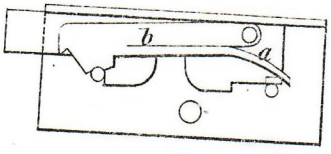


FIG. 5.

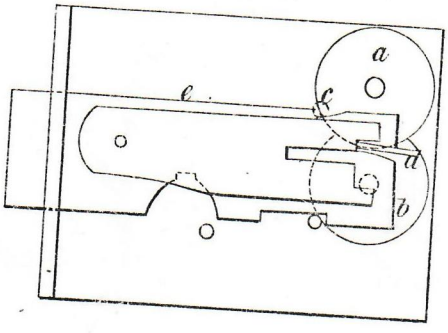


FIG 2.

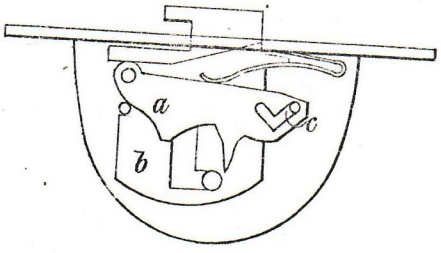


FIG. 7.

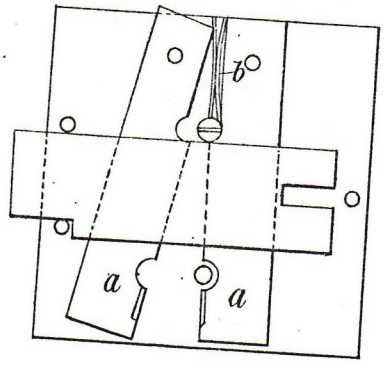
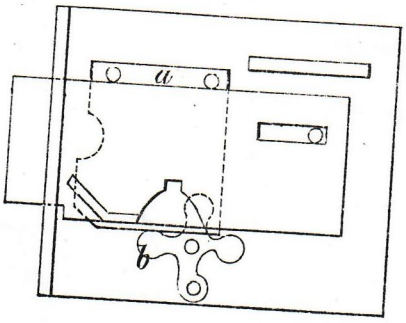


FIG. 6.



The drawing left with provisional specification is not colored.

Drawn on Stone by Malby & Sons.

LONDON: Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE, Printers to the Queen's most Excellent Majesty. 1855.