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Latches and Latch and other Locks.

CHUBB & HUNTER'S SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, JOHN CHUBB, of Saint Paul's Church Yard, in the City of London, Patent Lock and Fire Proof Safe Manufacturer, and EBENEZER HUNTER the elder, of Wolverhampton, in the County of Stafford, Lock Maker, send greeting.

WHEREAS we did, by Petition, humbly represent unto Her most Excellent Majesty Queen Victoria that we had invented "IMPROVEMENTS IN LATCHES, LATCH LOCKS, AND OTHER LOCKS FOR FASTENING;" and Her said Majesty, being willing to give encouragement to all arts and inventions which may be for the public good, was graciously pleased, by Her Royal Letters Patent under the Great Seal of the United Kingdom of Great Britain and Ireland, bearing date at Westminster, the Eleventh day of January (One thousand eight hundred and forty-seven), in the tenth year of Her reign, for Herself, Her heirs and successors, to give and grant unto us, the said John Chubb and Ebenezer Hunter, our executors, administrators, and assigns, Her especial license, full power, sole privilege and authority, that we or they, by ourselves or themselves, or by our or their deputies, servants, or agents, or such others as we or they shall agree with, and no others, during the term of fourteen years from the date of the said Letters Patent, should and lawfully might make, use, exercise, and vend our said Invention, within that part of Her said Majesty's Dominions called England, Her Dominion of Wales, and Town of Berwick-upon-Tweed, and the Islands of Jersey, Guernsey, Alderney, Sark, and Man, and also in all Her Majesty's Colonies and Plantations abroad, in such manner as to us, our executors, administrators, and assigns, shall seem meet, and that we or they shall enjoy the whole profit and

advantage arising by reason of the said Invention during the said term of fourteen years; and whereas the said Letters Patent contain a proviso obliging us, the said John Chubb and Ebenezer Hunter, particularly to describe and ascertain the nature of our said Invention, and in what manner the same is to be performed, by an instrument in writing under our hands and seals, or under the hand and seal of one of us, and to cause the same to be enrolled in Her Majesty's High Court of Chancery within six calendar months next and immediately after the date of the said Letters Patent, as in and by the same, reference being thereunto had, will more fully and at large appear.

NOW KNOW YE, that in compliance with the said proviso, I, the said John Chubb, for myself and for the said Ebenezer Hunter, do hereby declare that our said Invention is described and ascertained in manner following, and by the aid of the two Sheets of Drawings hereunto annexed (that is to say):—

The object of that part of our improvements which relates to latches and latch locks is to give security against the latches or spring latches or spring bolts in latches and latch locks being forced open, or being unlatched or withdrawn or unlocked by means of picklocks or false keys, such latches, spring latches, or spring bolts aforesaid, as they are commonly constructed and used, are adapted to latch or shoot by self-action of their own weight or of their own springs when the door to which they are applied is shut. But after having been so latched or shot by their own self-action the said ordinary latches or spring latches or spring bolts (being then on the latch) are not retained by any other means than by their own weight or their own springs from being forced open or being unlatched or withdrawn or unlocked by means of picklock or false keys, so as to allow the door to be opened. And although it is common to apply tumblers to the latches or spring latches or spring bolts, in some kinds of latch locks, nevertheless those tumblers do not come into action when (by the shutting of the door) the latch or spring latch or spring bolt becomes latched or shot by its self action as aforesaid; but in order to bring the tumblers into action, and obtain any security therefrom, it is requisite to apply a key, and by action thereof the spring latch or spring bolt is shot further out than it had been previously shot by its said self-action, and when so shot farther out it becomes securely locked and retained by means of the tumbler or tumblers, from being withdrawn, except by aid of the key. It is well known that the spring latch locks in ordinary use for street doors of houses are insecure when left on the latch, that is, left in the state which they will assume by their own self-action aforesaid, and unless such

spring latch locks are made without any keyhole at the outside of the door they can be easily opened by picklock or false keys. And note, there are latches of a peculiar construction known as Chubb's Patent Latches, which fasten of themselves by self-action on the shutting of the door, and which, when on the latch, possess the same kind of security as several tumblers would give. They were invented by my late father, Charles Chubb, to whom Letters Patent were formerly granted therefor, and were extensively manufactured by him, and, since his decease, by me. They can be made with a keyhole at the outside of the door, so as to be unlatched by a key from the outside, as well as by the usual mode of turning a knob handle at the inside of the door, and are very secure against being so unlatched from the outside by picklock or false keys. Now our present improvements (by different means now about to be described) will give the same security to the latches or spring latches, or spring bolts of latches, and latch locks.

Fig. 1, Sheet I., of the Drawings hereunto annexed, is an elevation of a latch constructed according to part of our said improvements, the cover plate being removed in order to shew the interior parts as they would appear when seen from the inside of the door to which the latch is applied, supposing that door to be transparent, so as to be seen through.

Fig. 2 is a horizontal section of the same latch viewed from above, to shew the relative positions of the several tumblers and other interior parts.

Fig. 3 is an elevation like Fig. 1, but shewing interior parts which are concealed in Fig. 1. A, A, is the rim or exterior case of the latch, consisting of a back plate C, and four sides A as usual; and B, Fig 2, is the section of the cover plate which fits into the said four sides A, and is fastened by screws so as to form a complete box or case which encloses all the mechanism. The said cover plate B applies against the inside of the door when the latch is fastened by screws in its place against that inside. The keyhole is cut out through the cover plate B suitably for the admission of the key K, when the same is inserted from the outside of the door into a corresponding keyhole cut through the thickness of the door. And note, the keyhole may also be continued through the back plate C, as shewn at *a*, Fig. 1, suitably for the admission of the key from the inside of the door, when required for double locking the latch, so that the same cannot be unlocked by means of the knob handle E, Fig. 2, at the inside, but the said keyhole at the inside is not an essential part of the latch, as will be explained. G are the tumblers, one behind the other, in Fig. 1, and *h* the fixed centre pin, serving as their centre of motion about which they are all moveable, but quite independently one of the other. Six tumblers are shewn in Fig. 2, but the number may be varied.

l are the tumbler springs made of one piece of steel cut with nicks like the teeth of a comb, so as to become divided into as many springs as there are tumblers, and one of those springs acts upon each tumbler (in aid of the weight thereof) to urge it to move downwards about its centre of motion *h* towards the keyhole *a*. When the key *k* is inserted into the keyhole, and turned round therein, then the several steps on the bit *d* of the key, acting against the lower edges of the several tumblers G, will lift them all upwards in opposition to their several springs *l*, each tumbler G being thereby lifted to its own proper intended height, so as that the long horizontal notches in all the several tumblers G will coincide one horizontal notch with another, and will all correspond with the stump *m*, which projects out forwards from the latch or bolt I, which latch or bolt is applied flat against the back plate C, behind all the tumblers G, and is capable of being lifted up at the outer end *i*, and also of sliding endways. The latch or bolt I is guided in its motions by the outer end *i* passing through the end A of the rim, and by a slot *x* (shewn dotted in Fig. 3), through the inner end being fitted to a fixed stud which projects out forwards from the back plate C. The outer end, where it passes through the rim A, is cut away with a slope at the under side *i*, so as to permit that outer end to descend when the latch or bolt I is withdrawn, as represented in Fig 3, but when the latch or bolt I is shot out, as in Fig. 1, (or farther out than is there represented), then the outer end *i* fills the opening through the end of the rim A, so as to retain the latch or bolt I to move in an endway direction only. S is a spring, and R a lever moveable about the fixed centre pin *r*, for the purpose of transmitting the force of the spring S to the latch or bolt I, with a tendency to shoot or move it endways outwards; but, at the same time, in consequence of the upper end of the lever R acting against the upper part of the latch or bolt I, at *k* (above the level of the fixed guiding stud in the slot *x*), the said force of the spring S, which is so transmitted by the lever R, will act in aid of the weight of the outer end *i* of the latch or bolt, with a tendency to urge that end *i* downwards (as far as the opening through the end of the rim A will permit the said end *i* to descend), as well as with a tendency to shoot the whole of the bolt or latch I endways; when the latch or bolt I is withdrawn, as appears in Fig. 3, then the aforesaid slope, which is cut away from the under side *i* of the outer end of the latch or bolt I, will allow that outer end to descend by the aforesaid action of the lever R at *k*, aided by the weight of that outer end, so that a notch *f* at the under side of the bolt I will catch upon a fixed stud *g*, which projects out from the back plate C, so as to detain the latch or bolt I from being shot forwards endways by action of the lever R, until the outer end *i* of the latch or bolt has been first raised

so much as to clear the notch *f* from the fixed stud *g*, and then the latch or bolt I will immediately shoot forwards for latching and fastening the door. The extreme end *p* of the latch or bolt I always projects out beyond the end of the rim A, even when the latch or bolt I is withdrawn, as in Fig. 3, as far as it can go into the rim. And when the door is in the act of being nearly closed that extreme end *p* acts against a fixed inclined plane or curve *q*, Fig. 2, on the hasp or staple J, which is fixed to the doorpost, so that in the final closing of the door the extreme outer end *p* of the latch or bolt will be forced to ascend the said inclined plane or curve *q*, and thereby the outer end *i* of the latch or bolt I will be so much raised upwards as to disengage its notch *f* from the fixed stud *g*, and then the whole of the latch or bolt I will suddenly shoot forwards to the position shewn in Fig. I, by what has been mentioned as self-action of the latch or bolt, but in reality being by reaction of the spring S transmitted by the lever R. Note, a notch is cut out in the hasp J just above the fixed inclined plane or curve *q*, the size of that notch being adapted to the size of the extreme end *p* of the latch or bolt, so as to permit that end to enter into the hollow of the hasp J. When the said end *p* has passed up to the summit of the inclined plane or curve *q* at the final closing of the door, and when the latch or bolt I shoots forwards, the outer end *i*, *k*, of the latch or bolt I, which then enters into the hollow of the hasp J, is so much larger, and enters so much farther than the said notch, that the said outer end *i*, *k*, of the latch or bolt I will obtain a secure hold in the hollow of the hasp J, notwithstanding the said notch; and when the latch or bolt I is shot forwards as aforesaid into the position shewn in Fig. 1, its stump *m* will come opposite to the upper parts of the transverse notches *z* in the tumblers G, and then each of those tumblers will descend by reaction of the several springs *l*, so as to catch and interlock the stump *m* within those upper parts of the transverse notches *z*, and thereby the latch or bolt I will be detained and securely locked, so that it cannot be withdrawn or forced back unless each one of the several tumblers G is previously lifted to its own proper intended height for bringing the horizontal notches of the several tumblers to coincidence one with another, and all of them with the stump *m*, as already mentioned. And also that being properly done without lifting any one of the tumblers higher than its said intended height, for if any one of the tumblers is over-lifted then the lowest part of its transverse notch *z*, which is below the horizontal notch, will interlock with the stump *m*, so as to detain the latch or bolt I, all which is only the usual means whereby tumblers give security to prevent a bolt being withdrawn or forced back, unless by action of the true key; but hitherto, in ordinary latches or latch locks, the tumblers that are sometimes applied therein are not operative (as is the case according

to this part of our improvements as aforesaid) when the latch or bolt has been merely latched or shot out by its own self-action or spring action, and (as already mentioned) it is only by subsequent action of the key in such ordinary latches or latch locks, and thereby shooting the bolt further out than it had been previously shot by the said self or spring action, that the tumblers are brought into operation for detaining the bolt from being withdrawn. And when the latch, Fig. 1, is fastened as there represented, that is, with its latch or bolt I latched or shot into the hollow of the hasp J by self or spring action at the final closing of the shutting of the door, and the said latch or bolt I is secured in that position by the tumblers G from being unlatched or withdrawn, as already described, then, in order to unlatch or withdraw the bolt I from the inside of the door, the knob handle E, Fig. 2, must be turned partly round in the proper direction; or to do the same from the outside of the door the key K must be inserted through the keyhole in the door and in the cover plate B, and turned partly round in the proper direction. In either case the follower H, or the key K, will act in a similar manner, first to lift or raise each one of the tumblers G to its proper intended height, but no higher, and after having thereby brought the horizontal notches of all the several tumblers G to coincide one with another and with the stump *m*, then the follower H, or the key K, will come into action against one of the talons *t* or *w* of the latch or bolt I, in order to draw the same back nearly to the position Fig. 3, but with the outer end *i*, *k*, raised up as high as it can go, in which position it will allow the door to be opened. The extreme end *p* then passing freely through the notch in the hasp J, the stud *m* moves along without obstruction in the horizontal notches of the tumblers G, whilst the latch or bolt I is so drawn back, and after the door is opened the turning action of the knob handle E or of the key K being discontinued, then the outer end *i*, *k*, of the latch or bolt I descends, so that the notch *f* catches into the stud *g* in order to detain the latch or bolt I exactly in the position, Figure 3, in opposition to the reaction of the spring S, as already explained, and the parts will remain in that position after the action on the knobs or handle E, or on the key K, is wholly discontinued, and after the key is withdrawn. But the parts being in the said position, Figure 3, are ready for latching by self-action or spring action on the final closing of the door, so as to fasten the same, as already explained. The knob handle E is fastened on a square at the end of an axis or spindle *v*, which passes through a round hole in the back plate C to the interior of the latch, and a leaf or bit H, called the follower, projects out from the axis *v*, with steps like those on the bit of a key, formed in a suitable manner for acting against the tumblers G, and one of the talons *t*, of the bolt I, when the knob handle E is turned partly round with a similar action to that of the bit of a

key, except that the action against the tumblers is nearer to their centre of motion *h*, and the talon *t* is nearer to the end of the latch or bolt I than is usual for the action of a key. The axis *v* is hollow like the pipe of a key, and fits upon a fixed centre pin which projects out from the cover plate B, as shewn by dotted lines Fig. 2, so as to serve for the centre of motion of the follower H. And note, the use of the keyhole *a*, Fig. 1, through the back plate C, at the inside of the door, is for inserting the key K for the purpose of throwing the latch or bolt I an additional shoot beyond the position Fig. 1, the bit of the key then acting against another talon which is formed in the bolt for that purpose, as shewn by dotted lines between the talons *t* and *w*, as before mentioned, all which is in the usual and well-known manner of adapting a bolt for being double locked by two successive turns of the key. And also the tumblers G have their horizontal notches prolonged, with transverse notches *y* at the ends, for catching and interlocking the stump *m* when the latch or bolt I is thrown out, by means of the key, to the full extent of the said additional shoot, and then the talon *t* comes into such a position in respect to the follower H that the latch or bolt I cannot be withdrawn from that additional shoot by means of the knob handle E, but only by means of the key. And note, the said additional shooting of the latch or bolt I by the key can be performed from the outside of the door as well as from the inside, but when performed in either way the outer end *i*, *k*, of the latch or bolt enters into the whole depth of the hollow in the hasp J, and renders the fastening of the door very secure. The lever R comes to rest against a fixed stop pin when the latch or bolt has made its said additional shoot, so as then to have no effect on the latch or bolt for giving any self-action or spring action thereto. The said additional shooting of the latch or bolt I is no part of our present improvements, but by the circumstance of the latch or bolt I being securely retained by its stump in interlocking into the transverse notches *z* of the tumblers G when the latch or bolt has latched of itself (or made its own shoot by self-action or spring action) at the final closing of the door, as already described, all the security of a good tumbler lock is obtained by a latch which is constructed according to this part of our improvements. And note, the said additional shooting of the latch or bolt I is not a necessary part of the latch Figures 1, 2, and 3, for the same may be made without any keyhole *a* at the inside, and the tumblers *g* may be made without the aforesaid prolongation of their horizontal notches G or any transvers notches *y* at the ends of those prolongations; and it is when so constructed that it is properly called a latch constructed according to part of our improvements, because it has the properties of a latch, videlicet, that it will latch of itself by self-action or spring

action in consequence of the end of its latch or bolt I being lifted up (when the door is nearly closed) by action of the extreme end P of the latch or bolt I against the fixed inclined plane or curve *q* of the hasp J, and, in consequence of the reaction of its spring S being allowed to operate at the final closing of the door, the latch or bolt will then shoot out snddenly, and carry its outer end into the hollow of the hasp J for fastening the door; but, by virtue of this part of our improvements, the latch or bolt, after so shooting out of itself, will be securely detained by the tumblers G from being forced back or from being withdrawn, except by aid of the key from the outside of the door, or by turning the knob handle E at the inside thereof; but when constructed as represented in Figures 1, 2, and 3, so as to be capable of an additional shoot of the latch or bolt by means of the key, that is, with the inside keyhole *a*, and additional transverse notches *y* in the tumblers G, and an additional talon to the latch or bolt, as already described, then it is more properly called a latch lock constructed according to this part of our improvements (although, as already stated, that additional shooting forms part of our improvements), because the double shooting of the latch or bolt, and the security resulting therefrom, is performed by the key only, in the manner of double shooting the bolt of a lock, without any of the self-action or spring action which takes place in a latch. Note also, that the latch or latch lock, Figures 1, 2, and 3, is represented with what is called a detector Z applied to its latch or bolt, according to another part of our improvements herein-after described, but such detector, although an additional security, is not a necessary part, and may be omitted or introduced as may be preferred; V, Figure 2, is a small finger knob at the outside of the back plate C (inside the door) for giving motion to a cross bolt W, Figure 1, within the box or case of the latch so as to catch into a notch in the under edge of the latch or bolt I for detaining the same in the position Figure 3 when required.

Figures 4, 5, 6, and 7, Sheet I., represent another latch constructed according to part of our improvements, Fig. 4 being an elevation with the cover plate removed. Fig. 5 a section viewed from beneath, and Figures 6 and 7 are elevations, shewing different positions of the interior parts. The same letters being used, as in Figures 1, 2, and 3, for reference to parts which are similar or corresponding in the two latches, part of the preceding description will apply to the present Figures, viz^{t}, the rim A, cover plate B, back plate C, the knob handle E at the inside of the door, with its axis *v*, and follower H, the tumblers G with their fixed centre pin *h*, and springs *l*, the latch or bolt I, with its spring S and lever R on the fixed centre pin *r*. The outer end *p* of the latch or bolt I is bevilled as represented in Fig. 5, and the

fixed hasp J has an inclined plane or curve *q*, called a striking plate, with which the bevilled end *p* of the latch or bolt I comes in contact when the door is nearly closed, so that by oblique action of *p* against *q* the latch or bolt I will be pushed back, as shewn in Fig. 7, in opposition to the force of its spring S, until the final closing of the door, when the bevilled end *p* of the latch or bolt, having passed by the fixed inclined plane or curve *q*, the latch or bolt will then shoot suddenly out by self-action or spring action, so as to insert its outer end into the hollow of the hasp J, and thereby fasten the door; and when it is required to open the door from the inside, then, by turning the knob handle E round in the proper direction, its follower H will act against the talon *t* at the end of the latch or bolt T, so as to draw the same back in opposition to its spring S into the position Fig. 7, and then it will permit the door to be opened; or, in like manner, to open the door from the outside, the key K, being inserted through the keyhole in the door and in the cover plate B, as shewn in Fig. 5, and turned round in the proper direction, the bit of the key will act against another talon *w* of the latch or bolt I, to draw the same back to the position Fig. 7. And note, the key K is made with a pipe to fit upon a pin *a*, which projects out from the back plate C, and serves for the centre of motion of the key which is not adapted to be inserted from the inside of the door. And note, in case of the latch, Figures 1, 2, and 3, being constructed without the means of making the additional shoot already described, it will not have any keyhole at the inside of the door, but only a keyhole at the outside, and then the key may be made with a pipe to fit upon a fixed centre piu projecting out from the back plate C, and thus far the aforesaid operation of the latch, Figures 4, 5, 6, and 7, is as usual in ordinary latches, wherein the latch or bolt I, when it is shot out, as in Fig. 4, by self-action or spring action (for fastening the door) is not detained in that position by any other means than by the force of the spring S for preventing it from being forced or drawn back to the said position, Fig. 7, which will allow the door to be opened. But according to this part of our improvements, the transverse notches *z* in the tumbler G interlock the stump *m* of the latch or bolt I, so as to detain it in that position to which it has been shot out by its own self-action or spring action for fastening the door, and the latch or bolt I cannot be forced back or drawn back to the position, Fig. 7 (so as to permit the door to be opened), unless all the several tumblers G are brought with their horizontal notches to coincide one with another and with the stump *m*, which may be done either by turning the knob handle E at the inside of the door, or by inserting the key K into the keyhole at the outside of the door, and then turning the key, but cannot be done by picklock or false keys. In the section, Fig. 5, five tumblers,

G, appear side by side one behind another, but in fact there are only four operative tumblers, and they are coloured orange, because that one Q, Figures 5, 6, 7, which is next to the latch or bolt I, although it resembles the others, does not act in the usual manner of a real tumbler, and it may be more properly termed a detent Q; it is coloured yellow in the Figures, and it has no spring *l* applied to it, but, instead thereof, the detent Q has a spring S applied to press against the extreme end of it, as shewn in Figures 4, 6, and 7, in order to cause friction, and thereby keep the detent Q steady, without moving from the position that may be given to it either by action of the stump *m* of the latch or bolt I, when that stump is moving in the notch which is cut through the detent Q, as seen in Figs. 6 and 7, or at other times by the bit *d* of the key K, or of the follower H, acting beneath the lower edge of the detent Q so as to lift the same in like manner as a tumbler is lifted. For instance, suppose the latch or bolt I is in the act of being drawn back to the position Fig. 7, either by turning the knob handle E and follower H, or else by turning the key K in a proper direction, whereby the bit of the follower H, or of the key K, acts beneath the lower edges of the several tumblers G to lift each one to its proper intended height, and also acts against the talon *t* or *w* of the latch or bolt, for so drawing it back, and likewise the same bit, by acting against the lower edges of the detent Q, lifts the same np about the centre of motion *h*, and when the latch or bolt I is thus carried back to the position, Figure 7, the door can be opened, and then the action on the knob handle E and follower H, or on the key K, being discontinued, the latch or bolt I will begin to move outwards again by reaction of its spring S, and the talon *t* or *w*, then acting against the follower H or the key K, will turn the follower or the key, which in so turning will act beneath the lower edge of the detent Q at *n* or at *o*, so as to lift the detent Q up to the position Fig. 6, by the same time that the latch or bolt I has arrived at the position shewn in that Figure, and also in Fig. 4, when the stump *m* will be intercepted by the catching part *c* of the notch in the detent Q, so as to prevent the latch or bolt I shooting any farther out, and it will continue in that position, Figures 4 or 6, so long as the door continues open; but when the door is nearly shut, then the bevilled end *p* of the latch or bolt I will come into contact with the fixed inclined plane or curve *q* of the striking plate or hasp J, so as by oblique action of such contact in the further closing of the door to push back the latch or bolt I to the position Fig. 7, and the stump *m*, acting above the part *e* of the notch in the detent Q, forces the same down to the position there shewn. After which, when the door is completely closed, the latch or bolt I shoots suddenly outwards by self-action or spring action,

with its outer end far into the hollow of the hasp J for fastening the door, and in so shooting outwards the latch or bolt I moves as much farther than the position Fig. 4 as to carry the stump *m* opposite to the transverse notches *z* of the several tumblers G, which thereupon fall by action of their respective springs *l*, in order to interlock the stump *m* within the said transverse notches *z*, and thereby secure the latch or bolt I against being forced back or withdrawn, or the door opened, until the tumblers G are lifted to the proper intended height for each one, which (as already mentioned) can be done, and the latch or bolt I withdrawn to the position Fig. 7 for opening the door, either by turning the knob handle E at the inside of the door, or else by inserting the key K at the outside and turning it round, but cannot be done by picklock or false keys. Note, when the latch or bolt I shoots farther out than shewn in Fig. 4, as aforesaid, the catching part *c* of the notch in the detent Q offers no impediment to the motion of the stump *m*, because the detent Q continues in the position shewn in Fig. 7. The key K cannot be turned all round in the latch, Figures 4, 5, 6, and 7, which as there represented is a latch constructed according to part of our improvements, the latch or bolt I of which can be always withdrawn by turning the knob handle E at the inside of the door, or by applying the key K at the outside and turning it round. But in case it is desired to prevent the latch or bolt I being so withdrawn by the key K from the outside, there is a cross bolt W, Fig. 4, which, by means of a finger knob V, Fig. 5, at the outside of the back plate *c* (inside the door), can be inserted into a suitable notch in the upper edge of the latch or bolt I, so as to completely fasten the same either from being withdrawn or else from being shot out, as may be desired.

Figures 8 and 9, Sheet II., represent another latch lock, constructed according to part of our improvements; and the same letters being used as in the foregoing description for reference to similar or corresponding parts, it is unnecessary to repeat the whole. The office performed, as already explained, by the detent Q in Figures 4, 5, 6, and 7, is performed in Figures 8 and 9 by that one of the tumblers which is adjacent to the latch or bolt I, and which is shewn at Q, Fig. 9, the other tumblers G, Fig. 8, being removed from before it. The tumbler Q has a projecting tooth *u* at its upper part, which tooth *u* is adapted to be caught by the end of a spring catch *s* (the other end of which is fixed to the back plate C), whenever the tumbler Q is lifted up, as shewn in Fig. 9, so as to be a little higher than its true intended position as a tumbler, (that said position being when its horizontal notch coincides with the stump *m*); and when the tooth *u* is so caught by the spring catch *s* it prevents the tumbler

Q from descending again by reaction of its usual spring *l*, until the spring catch *s* is bended upwards so much as to let go the tooth *u*. The spring catch *s* is situated opposite to a notch at the upper edge of the latch or bolt I, and whenever the latch or bolt I is pushed back as far as it can go, then an inclined part *e* of that notch will come to act beneath the end of the spring catch *s*, so as to bend it upwards in order to let go the tooth *u*; but so long as the tooth *u* remains caught by the end of the spring catch *s*, the tumbler Q will be held up (as in Fig. 9) so much above its proper intended height as that the stump *m* of the latch or bolt I will be intercepted by a catching part *c* in the notch of the tumbler Q, so as to retain the latch or bolt I from shooting out any farther than is represented in Fig. 9. But when the spring catch *s* is disengaged from the tooth *u*, and the tumbler Q is therefore allowed to descend by reaction of its spring *h* to its proper intended position, then the catching part *c* will not interfere with the stump *m*, and the latch or bolt I will be at liberty to shoot farther out by self-action or spring action, so as to assume the position Fig. 8, when the stump *m* having come opposite to the upper parts of the transverse notches *z* in the several tumblers G, they will descend by reaction of their respective springs *l*, so as to interlock the stump *m* into the said parts *z*, and thereby the latch or bolt I will be prevented from being forced back or withdrawn, unless each one of the several tumblers G is raised to its true intended height, and no higher than that, as already explained respecting the other latches and latch locks. The position, Fig. 8, is when the latch or bolt I is shot with its bevilled end *p* out into the hollow of the hasp, suitably for fastening the door, and the bolt or latch I can be withdrawn from that position, Fig. 8, either by turning the follower H by means of its knob handle at the inside of the door or by inserting the key K at the outside and turning it round. In either case the bit of the follower H, or of the key K, will act beneath the lower edges of the tumblers G to raise each one to its proper intended height for allowing the stump *m* to move freely along within the horizontal notches in the tumblers G, and then the said bit, coming to act against the talon *t* or *w* of the latch or bolt, will draw the same back in opposition to its spring S, until the bevilled outer end *p* of the latch or bolt I is wholly withdrawn from the hollow in the hasp, and does not project beyond the end A of the rim, but allows the door to be opened. But note, when the bit of the follower or of the key had so withdrawn the latch or bolt I some part of the way, it passed beneath a small prominence at *n*, or at *o*, in the under edge of the tumbler Q, so as to overlift that one tumbler Q beyond its proper height to the position Fig. 9, and thereby cause its tooth *u* to be caught by the end of the spring catch *s*. After the latch or bolt I has been wholly withdrawn, as aforesaid, and the door

opened, then the action on the knob-handle of the follower H or on the key being discontinued, the latch or bolt I will shoot out again by the reaction of its spring S, and whilst so shooting out the talon *t* or *w*, by re-acting against the bit of the follower H or of the key K, will turn the follower or the key round, and, in so turning, the said bit, passing beneath the prominences *n* or *o*, Fig. 9, of the tumbler Q, will keep that tumbler raised (as there shewn) so that its tooth *u* will be caught by the spring catch *s*, and then its catching part *c* will intercept the stump *m*, thereby retaining the parts in the position Fig. 9, so long as the door continues open; and when the door is nearly shut the bevilled end *p* of the latch or bolt I coming in contact with the corresponding fixed bevilled or inclined plane or curve on the striking plate or hasp, the oblique action of such contact will force the latch or bolt back as far as it can go a very little before the time when the door is completely closed, and then at that time the latch or bolt I having passed by all the aforesaid contact of its bevilled end *p*, with the corresponding fixed bevil of the striking plate or hasp, the latch or bolt I will suddenly shoot out by self-action or spring action, with its end into the hollow of the hasp, so as to fasten the door, and assume the position Fig. 8, with the stump *m* securely interlocked into the transverse notches *z* of all the several tumblers G, and also of the tumbler Q, for the latter became liberated from its spring catch *s* when the latch or bolt I was forced backed nearly as far as it can go, as aforesaid, in consequence of the inclined part *e* of the latch or bolt I then bending the spring catch *s* so much upwards as to let go the tooth *u* of the tumbler Q, which being thereby left at liberty, and neither the bit of the follower H nor of the key K being beneath either of the prominences *n* or *o*, the tumbler Q descended by reaction of its spring *l*, and its catching part *c*, offered no impediment to the motion of the stump *m* until the latter arrived beneath the transverse notch *z* of the tumbler Q, as well as of the other tumblers G, and then they all descended, by reaction of their respective springs *l*, so as to interlock the stump *m*, as appears in Fig. 8. And thus far the aforesaid description of Figures 8 and 9 would be that of a latch, but those Figures represent a latch lock because the horizontal notches in the tumblers G and Q are prolonged, and have transverse notches *y* at the ends of the prolonged notches for interlocking the stump *m* when the latch or bolt I is thrown out an additional shoot by action of the key when turned round a second turn, during which the bit of the key acted against another talon on the latch or bolt I between the talons *t* and *w*, and after such additional shoot of the latch or bolt I it becomes securely locked so that it cannot be withdrawn by the follower H, and the talon *t* then assumes such a position

in respect to the follower H that the latter cannot be turned round, or act at all for withdrawing the latch or bolt. The said second shooting of the latch or bolt I, Figures 9 and 10, is nearly the same as already described in reference to Figures 1, 2, and 3, but is no part of our improvements.

Figures 10 and 11, Sheet II., represent another latch constructed according to part of our improvements, being nearly the same in its parts and their mode of operation as Figures 8 and 9, but the latch, Figures 10 and 11, is adapted for a drawer or till, and will fasten the same (with all the security of a lock having several tumblers) by self-action or spring action, when the drawer is closed without any assistance of the key K, which is only required for withdrawing the latch or bolt, in order to open the drawer or till. There is no knob handle or follower in Figures 10 and 11, and only one set of transverse notches *z* in the tumblers G and Q. The tumbler Q, Fig. 11, which is nearest to the bolt I, has its catching place *c*, projecting tooth *u*, and spring catch *s*, all the same as Figures 8 and 9, and operating in the same manner as already described. Also the outer end of the latch or bolt I, Figures 10 and 11, is bevilled, in order to operate by oblique action against a corresponding fixed bevil on the striking plate, so as to force back the latch or bolt I, in opposition to its spring S, when the drawer or till is in the act of being shut, and the instant that it is completely shut, then the latch or bolt I shoots out suddenly with its end into the hole in the striking plate by self-action or spring action, for fastening the drawer or till, the latch or bolt I, when so shot out by self-action or spring action, becoming secured by the tumblers in the manner already described, so that it cannot be forced back or withdrawn except by action of the key K. Also in Figures 10 and 11 the spring catch *s* is made to answer the double purpose of such a catch and of a detector, which is newly applied, according to another part of our improvement now to be described, and which may be applied to the tumblers of locks of other kinds, as well as to those of latches or latch locks.

The object of that part of our improvements which relates more particularly to locks (although applicable to such latches and latch locks as have tumblers) is for giving greater security to the tumblers of such locks, latches, or latch locks, by means of what is commonly termed a detector, which being applied to the set of tumblers of a lock, then in case of any one of those tumblers being overlifted or raised higher than its proper intended position during any attempt to unlock such lock by the introduction of picklock or false keys, the detector will come into action of itself to prevent one of the tumblers from afterwards descending to its proper intended position, whereby the lock is

rendered more difficult to be picked or unlocked, in consequence of the said action of the detector on that tumbler, and cannot be unlocked even by its own key until a suitable manipulation has first been made with that key for undetecting the lock and putting the detector out of action. The circumstance that the lock cannot be opened by its own key is information to the person using that key that some attempt has been made to unlock the lock, by introducing some kind of picklock or false key. Detector locks were originally invented by my uncle, Jeremiah Chubb, who obtained Letters Patent therefor, and were afterwards improved and brought into use by my late father, Charles Chubb, under further Letters Patent granted to him, and the detectors being subsequently simplified in construction and application, other Letters Patent were granted therefor to him and to the said Ebenezer Hunter, dated the Twentieth day of December, One thousand eight hundred and thirty-three. Now this part of our present improvements relating to detector locks is to dispose the detector above the tumblers, so as to operate upon a projection at the upper part of one of the tumblers, the detector being at the opposite side of the tumblers to that side thereof where the key operates for lifting the tumbler, so that no instrument that can be introduced at the keyhole can be made to reach the detector for undetecting the same; whereas, according to the same former Letters Patent of Charles Chubb and Ebenezer Hunter, the detector was applied at the ends of the tumblers farthest from their centre of motion, and operated upon projections from those ends, and the detector in that situation was too near the keyhole to be perfectly secure from being reached by some instrument introduced into the keyhole.

Figures 12 and 13, Sheet II., represent a tumbler lock with a detector Z applied to it, according to this part of our improvements, above the set of tumblers G. One of the tumblers M, Fig. 13, which is near (or nearest) to the bolt I of the lock has a projecting tooth *j* at its upper side and near that end of the tumbler which is mounted on the fixed centre pin *h*, which tooth *j* is adapted to be caught by the end of the detector spring Z whenever the tumbler M is overlifted above its proper intended height, and then the catching of the tooth *j*, by the end of the spring Z, prevents the tumbler M descending again by reaction of its spring *l*, but it will be retained permanently in its overlifted state, as shewn in Fig. 13, so as to keep the stump *m* of the bolt I interlocked in the lower part of the transverse notch *z* of the tumbler M, and thereby prevent the bolt I from being withdrawn, in which state the lock is said to be detected, and it cannot be unlocked, even by its own key K, because that can have no action whatever on the overlifted tumbler M, which is detained in that state by the detector Z; and in

order that the lock may become so detected in case of any other of the tumblers, instead of M, being so overlifted, the said tumbler M (in addition to having the aforesaid projecting tooth *j*) has also a small pin Y fastened into it, and projecting forwards from it over the upper edges of all the other tumblers G (see Fig. 12), and therefore, if any one of those tumblers is overlifted (as, for instance, by action of a picklock or false key) then the upper edge of that tumbler which is so overlifted will come into contact with the said pin Y, and by raising the same upwards will overlift the tumbler M, into which that pin is fastened, so that the projecting tooth *j* of the said tumbler will be caught by the end of the detector spring Z in the same manner as if the said tumbler M had been itself overlifted by action of the said picklock or false key. Wherefore any one of the tumblers G or M of the set wherewith the lock is provided being overlifted will cause the lock to become detected. And note, the said pin Y, and the manner of its operation as aforesaid, is no part of our present improvements, being the same as in Chubb and Hunter's former Patent aforesaid; and in order to undetect the lock when it is found that its own proper key K will not unlock it, and it is thereby made known that the lock has become detected, in consequence of some attempt having been made to use a picklock or false key, then the true key K, which cannot in such case be turned round in the proper direction for unlocking, must be turned round the contrary way as if for donble locking the bolt L, by giving an additional shoot thereto, and then the bit of the key K will come to act against another talon of the bolt I so as to urge the same outwards; and the several steps of the key K having lifted each of the tumblers to its proper intended height, the stump *m* will be at liberty to move into the prolongation U of the horizontal notches of the several tumblers G, so as to permit the bolt I to be moved outwards a little further than appears in Figures 12 and 13, for the purpose of undetecting the lock. And note, the said prolongation U in the tumbler M, Fig. 13, is so wide as to leave the stump *m* at liberty to move forwards as aforesaid, although that tumbler M continues in its overlifted state. And the said moving forwards of the bolt I causes the lock to be undetected by means of a small inclined part L at the upper edge of the bolt I acting beneath the extreme end of the detector spring Z, when the bolt I moves forwards as aforesaid, so as to lift the detector Z sufficiently upwards to disengage its catching end from the tooth *j* of the tumbler M, which thereupon descends by reaction of its spring *l*, leaving the lock undetected and ready to be unlocked by the usual action of the key K. And note, the aforesaid mode of undetecting the lock is no part of our improvements, except as regards the position of the inclined part L at the

upper edge of the bolt I, to correspond with the position of the detector spring Z, and of the tooth *j* of the tumbler M, which parts Z, *j*, and L, according to Chubb and Hunter's former Patent aforesaid, were disposed opposite to the end of the tumblers, but the new position in which they are applied according to this part of our present improvements gives an increased security by rendering the detector Z wholly inaccessible from the keyhole.

Figures 14 and 15, Sheet II., shew a small padlock with tumblers, and a detector Z applied above them. It is drawn the real size, and shews how the detector spring Z may be disposed with its fixed end towards the inner end of the bolt I, the catching end of the spring Z being in such case a hook, adapted to catch the tooth *j*, which projects up from the tumbler M. The operation is the same as already described, that hooked end of the detector Z being adapted to be lifted up by an inclined part of the upper edge of the bolt I when the same is shot forwards for undetecting the lock. The hooked detector spring Z, as in Figures 14 and 15, may be applied to large locks as well as to small.

The latch or latch lock, Figs. 1, 2, and 3, Sheet I., is represented with a detector spring Z applied to its tumbler M, Fig. 3. The foregoing description of the detector in Figs. 12 and 13 will apply to the detector Fig. 1, 2, and 3. And it has been already mentioned respecting the latch, Figures 10 and 11, that the spring catch *s* therein answers the double purpose of a spring catch (as previously described), and also the purpose of a detector. The construction of the said spring catch *s*, Figures 10 and 11, and the manner of its catching a tooth *u* which projects out from the tumbler Q, is very similar to the detector spring Z and tooth *j* of the tumbler M, Figure 13, and so the mode of removing the spring catch *s*, Figures 10 and 11, in order to let go that tooth *j* by action of an inclined part *e* of the latch or bolt I acting to bend the spring catch *s* when the bolt moves endway is similar to the action of bending the detector spring Z, Figure 13, by action of the inclined part L of the bolt I, wherefore the parts and their operation being so similar they can perform the double purpose aforesaid. And the said two purposes cannot interfere one with another, because the spring catch *s*, Figures 10 and 11 (as previously described), is only required to be operative when the latch or bolt I of the latch is drawn back, or is only partly shot forwards, as appears in Figure 11, when the stump *m* is not interlocked into the transverse notches Z of the tumblers; whereas the detector spring Z is only required to be operative when the latch bolt I is shot out to its full extent for fastening the door, and the stump *m* is interlocked in the transverse notches *z*, as appears in Figure 12. The tumbler Q, Figure 11, which has the projecting tooth *u*

for being caught by the end of the spring catch *s*, answers in every respect to the tumbler M, Figure 13, and has like that a pin similar to Y, Figure 13, projecting out from it for the same purpose of causing the latch, Figures 10 and 11, to become detected when any one of its tumblers G or Q is over-lifted. The bolt or latch I, Figs. 10 and 11, has an inclined part L, the same as the bolt I, Fig. 13, for the purpose of undetecting that part L, being brought into contact with the spring catch *s* (which is also the detector spring), when the latch or bolt I is thrown out somewhat further than the usual position, Fig. 10, for the purpose of undetecting in the manner already explained, and the notches of the tumblers G, Figures 10 and 11, are prolonged at U in order to admit the stump *m*, when thrown further outwards than in Fig. 10, for the purpose of undetecting. And note, our improvement herein-before described in latches and latch locks are only applicable to those cases where the outer end of the latch is bevilled suitably for being lifted up (as in Figures 1, 2, and 3), when the door is in the act of shutting, such lifting up being caused by oblique action against a fixed inclined plane or curve on the hasp or striking plate, or else the outer end of the latch or bolt being bevilled suitably for being pushed back edways (as in Figures 4, 5, 6, and 7, Figures 8 and 9, and Figures 10 and 11), when the door or drawer or till is in the act of shutting, such pushing back being caused by oblique action of the said bevilled end against a fixed inclined plane or curve on the hasp or striking plate.

Having now described our said improvements, I, the said John Chubb, for myself, and for the said Ebenezer Hunter, do hereby declare that the new Invention, whereof the exlusive use is granted to us by the Letters Patent herein-before recited, consists in the following particulars:—

First, the improvement herein-before described in reference to Figures 1, 2, and 3, Figures 4, 5, 6, and 7, Figures 8 and 9, also Figures 10 and 11, in latches and latch locks, whereof the outer end of the latch or bolt is bevilled suitably for being lifted up (as in Figures 1, 2, and 3), or for being pushed back endways (as in Figures 4, 5, 6, and 7, Figures 8 and 9, also Figures 10 and 11) by oblique action of such bevilled outer end against a fixed inclined plane or curve on the hasp or striking plate when the door or drawer or till or other moveable (to which the latch or latch lock is applied) is in the act of shutting; the nature of the improvement being that when the latch or bolt, after having been so lifted or pushed back by oblique action as aforesaid, and then shoots out suddenly by self-action or spring action at the final closing of the door, drawer, or till, or other moveable, for fastening the same as usual in ordinary latches and latch locks, that the latch or bolt shall by virtue of the improvement become securely detained by means

of tumblers, which will prevent it from being withdrawn or forced back, and thereby will prevent the door, drawer, till, or other moveable being opened; those tumblers coming into operation of themselves in the manner and by the means herein-before described at the time of the said sudden shooting out of the latch or bolt by self-action or spring action aforesaid, without requiring any use of a key or other manipulation for bringing the tumblers into operation.

Secondly, the improvement herein-before described in reference to Figures 12 and 13, and Figures 14 and 15, in detector locks, also applicable to latches or latch locks, of applying a detector spring of the kind herein-before described at that side of the tumblers which is most remote from the keyhole, in order to render such detector spring wholly inaccessible to any instruments which can be introduced at the key whole.

Thirdly, the improvement herein-before described in reference to Figures 10 and 11, in latches or latch locks, whereby some of the same parts which operate to produce the first improvement in the latch or latch lock, as herein-before described viz., (the spring catch *s* and tooth *u* and incline *e*, Figures 10 and 11), also serve the double purpose of a detector applied according to the second improvement, so as to obtain the advantages of both the first and the second improvements combined together without any additional parts beyond such as would be required for performing either the first or the second improvements alone without the other.

In witness whereof, I, the said John Chubb, for myself and for the said Ebenezer Hunter, have hereunto set my hand and seal, this Tenth day of July, One thousand eight hundred and forty-seven.

JOHN (L.S.) CHUBB.

AND BE IT REMEMBERED, that on the Tenth day of July, in the eleventh year of the reign of Her Majesty Queen Victoria, the said John Chubb came before our said Lady Queen in Her Chancery, and acknowledged the Instrument aforesaid, and all every thing therein contained and specified in form above written. And also the Instrument aforesaid was stamped according to the tenor of the Statute made in the fifty-fifth year of the reign of His late Majesty King George the Third.

HORNE.

Inrolled the Tenth day of July, One thousand eight hundred and forty-seven.

LONDON:
Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1857.

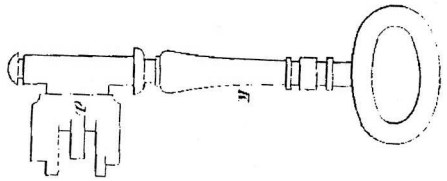


FIG. 1.

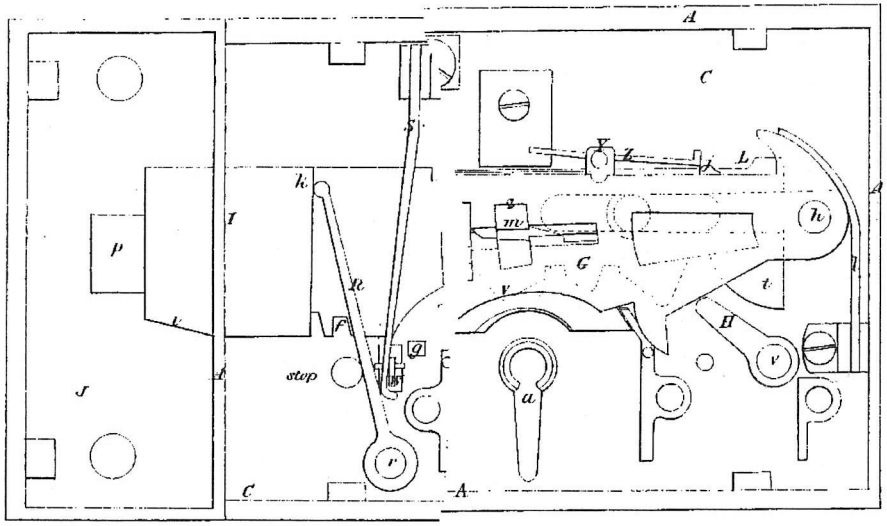


FIGURE 4.

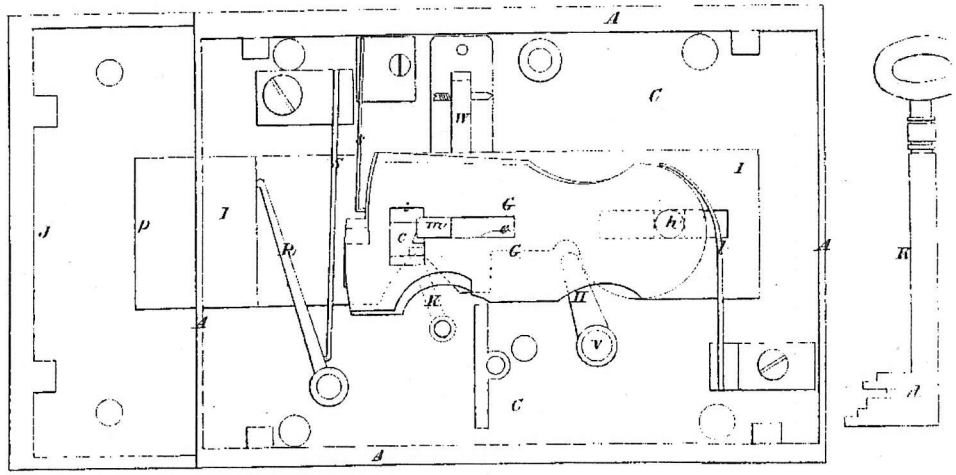


FIGURE 5.

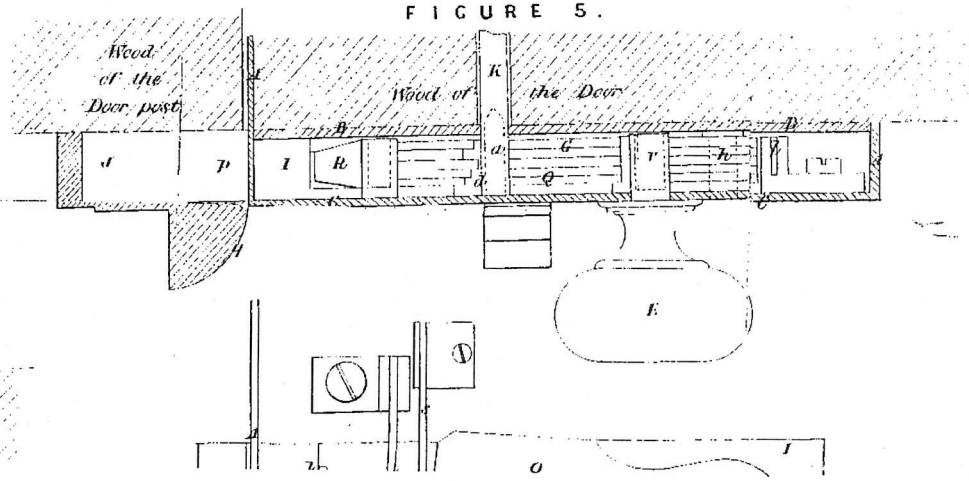
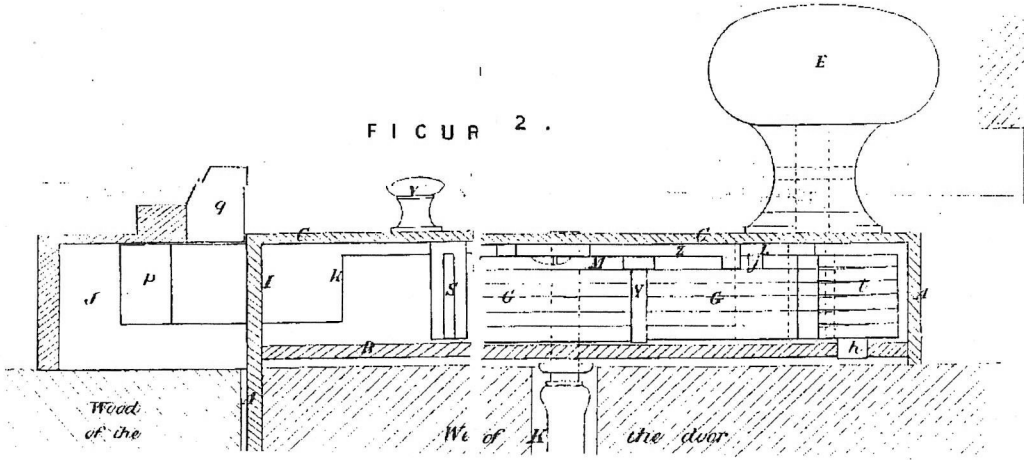


FIGURE 2.



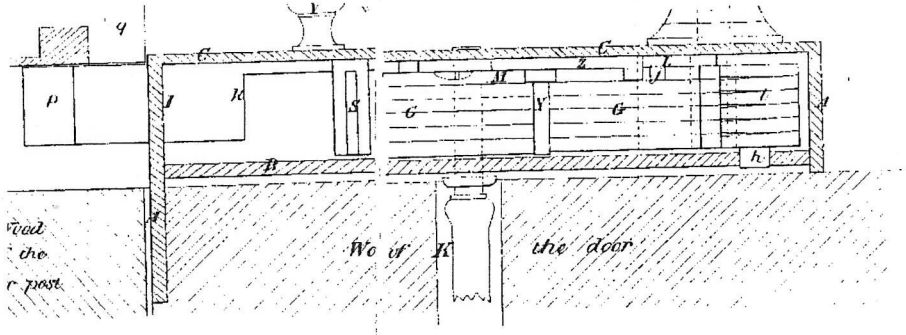
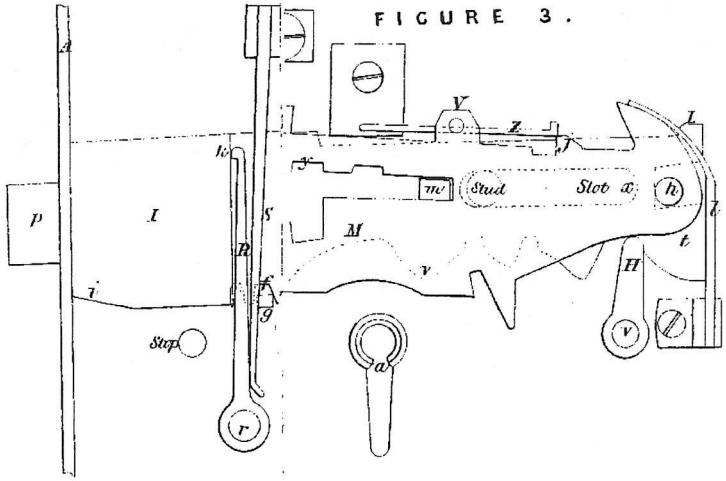


FIGURE 3.



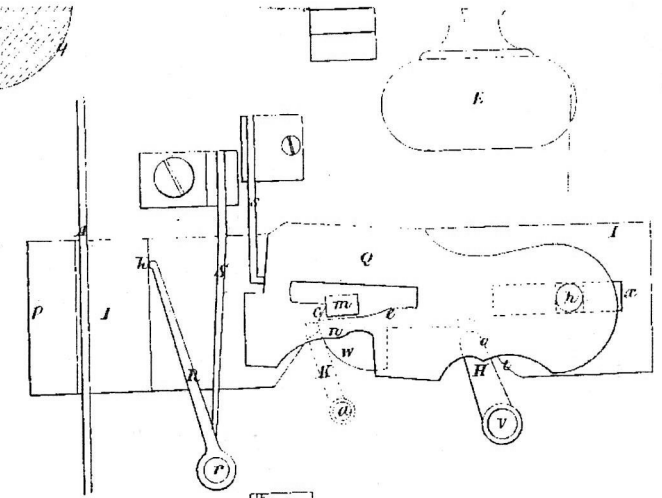


FIGURE 6.

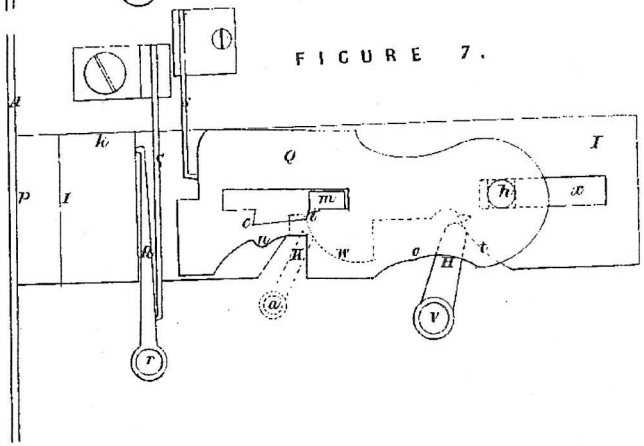


FIGURE 7.

Drawn on Stone by Maltby & Sons

London: Printed by George Edward Eyre and William Spottiswoode,
Printers to the Queen's most Excellent Majesty. 1857

FIGURE 8.

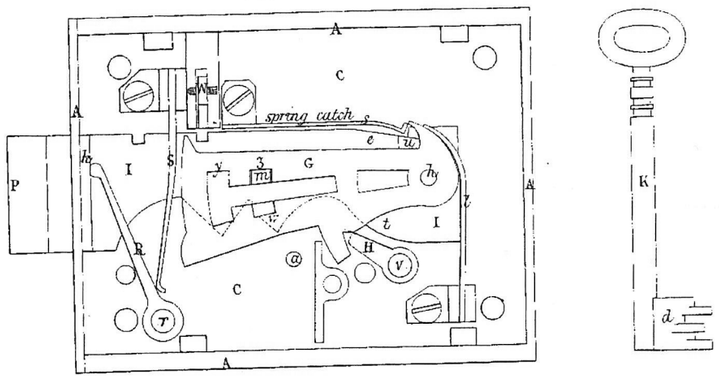


FIGURE 9.

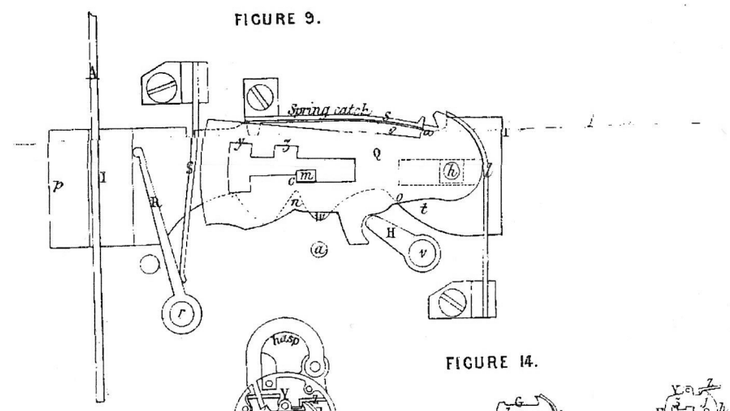


FIGURE 14.

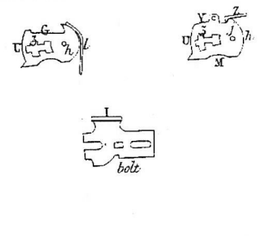


FIGURE 15.

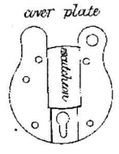


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FIGURE 10.

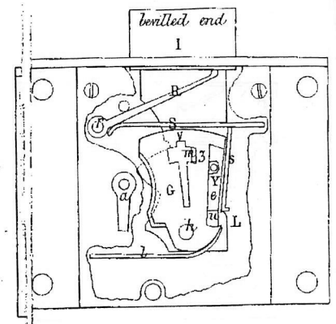


FIGURE 11.

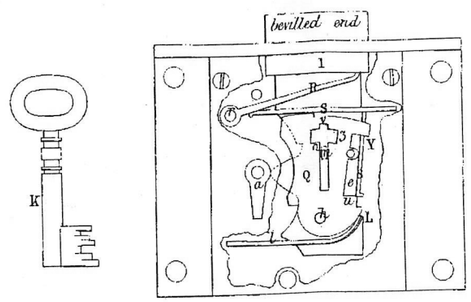


FIGURE 12.

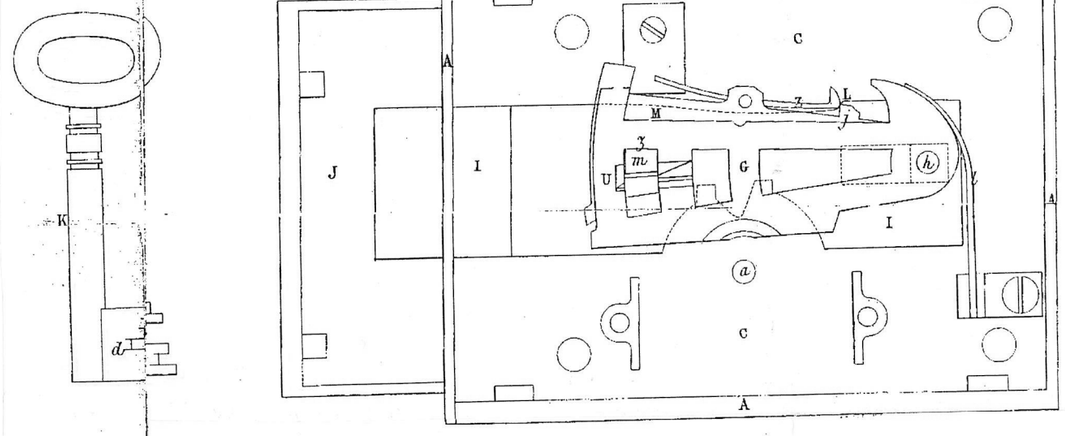
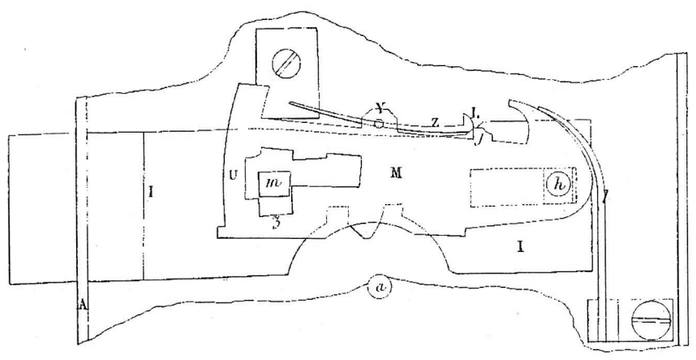


FIGURE 13.



Drawn on Stone by Malby

EDWARD EYRE and WILLIAM SPOTTISWOODE,
His most Excellent Majesty. 1857.