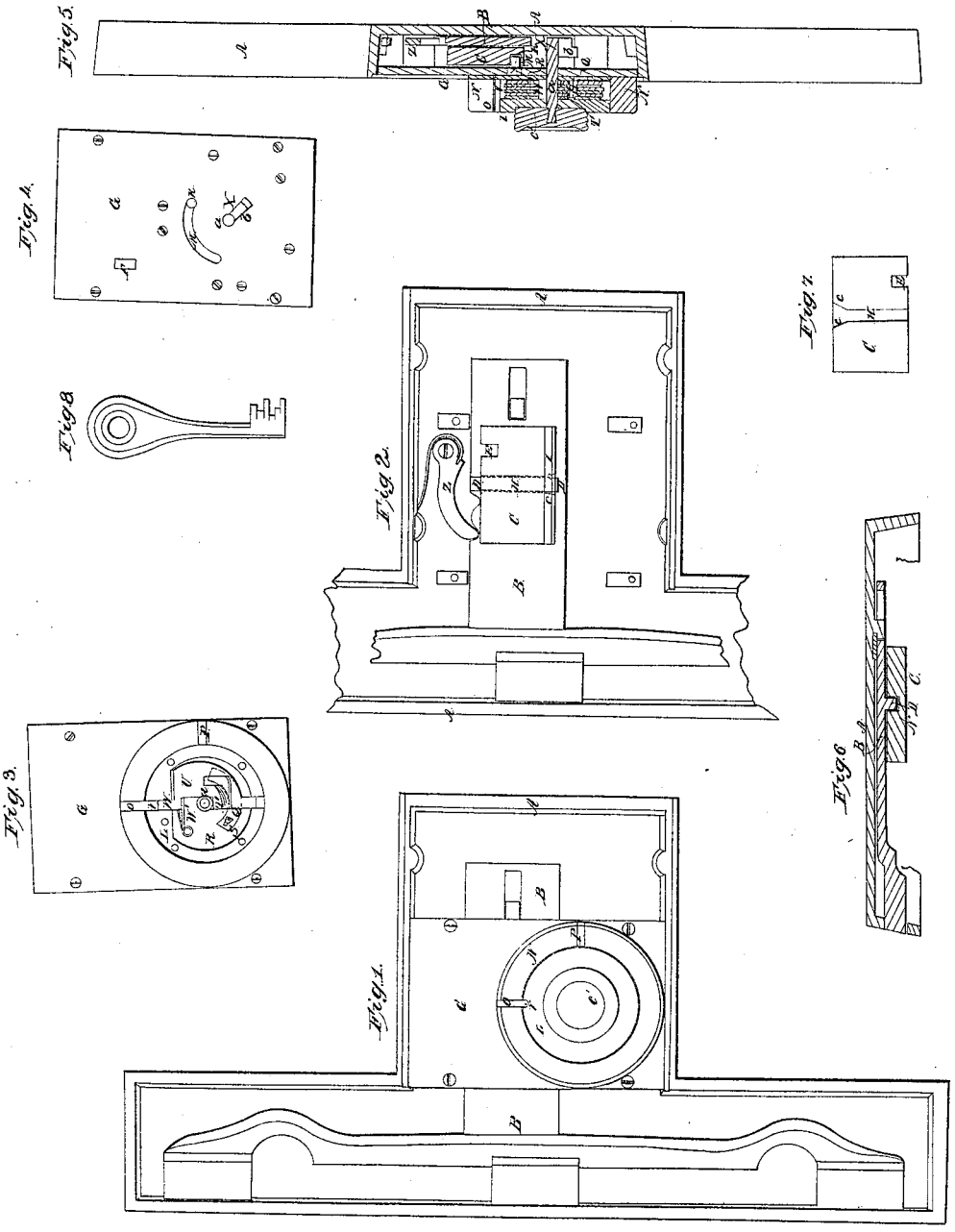
E. Kersham,

Lock.

No. 5,685. Patented Aug. 1, 1848.



UNITED STATES PATENT OFFICE.

EDWARD KERSHAW, OF BOSTON, MASSACHUSETTS.

POWDER-PROOF LOCK.

Specification of Letters Patent No. 5,685, dated August 1, 1848.

To all whom it may concern:

Be it known that I, EDWARD KERSHAW, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new or Improved Lock For Fireproof Safes, Bank-Vaults, &c.; and I do hereby declare that the same is fully described and represented in the following specification and accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1 denotes an elevation of the lock as it appears previous to being applied to a door. Fig. 2 is a view of the main bolt and its slide block as they appear when the ring plate and tumbler case are removed therefrom. Fig. 3 is a view of the tumbler case, tumblers, and surrounding ring, the top plate of the tumbler case being removed. Fig. 4 is a view of the rear or underside of the ring plate or face plate of the lock. Fig. 5 is a transverse, vertical and central section of the lock taken through the handle. Fig. 6 is a horizontal section of the main bolt and its slide block.

In the said drawings A exhibits the lock case, and B the main bolt.

C is a rectangular block of metal made to slide up and down on the main bolt. For this purpose the main bolt has a straight tongue D, raised upon ar across it which tongue is made to enter a corresponding groove made in the contiguous part of the block C, the said groove being so formed as to keep the block from any lateral movement independently of the main bolt, while at the same time it allows of a free vertical movement (up or down) of the block. In the upper edge of the block C a notch E is made as seen in the drawings, the said notch being made large enough to receive a stud F, which projects from the rear or underside of the face plate or ring plate G, the said plate being placed directly over the slide block, and confined to the lock case in any proper manner.

Fig. 7 denotes a view of the underside of the slide block C, and shows the groove H, which receives the aforedescribed tongue D, the lower part of the said groove being made to spread out so as to allow of the action of the fixed key by which the bolt is operated, and which will be hereinafter described.

The aforesaid slide block C has another groove (I) cut horizontally across it and in its front face, as seen in Fig. 2. This groove is intended to receive a pin or stud K, which projects from the rear side of the circular box or case L, which contains the tumblers. The said pin K passes through a curved slot M, made through the face plate, as seen in Fig. 4, and with such a curve as will allow the pin to pass from one extremity of it to the other, whenever the tumbler box or case L, is revolved to the extent of its movements.

A circular metallic ring N projects from the outer side of the face plate, and incloses receives, and sustains the said circular box L. Two passages O, P, are cut or made through the said ring as seen in Figs. 1 and 3. The box L revolves or moves around back and forth freely within the ring, its movement being limited to about ninety degrees of a circle, and by a curved slot Q, made through the bottom plate R, of the box, which slot receives and works upon a stationary stud S, which is made to project upward from the upper or outer surface of the face plate G, and to act in connection with the openings T, of a series U, of slide plates or tumblers arranged within the box L, as seen in Fig. 3. Through the side of the box L a passage V is made, which passage receives a series W, of projections from the tumblers each of said tumblers having its projection. These several projections are made of different lengths, which are so arranged with respect to the bits of the key, (a side view of which is seen in Fig. 8,) that when the said key is pressed into either of the passages O, P, and through it into the passage V, and so as to carry its bits forcibly against the said projections, the several slide plates or tumblers will be receded or moved back to such extent as to cause all their openings or slots T to come into such positions as to allow the pin or stud S, to pass into all of them when the box L, is turned around so as to carry the key from the opening O, to the opening P. By pressing the key down with sufficient force so as to overcome the pressure of the springs W′ of the several tumblers, it will be carried within or below the inner circumference of the ring N. This being done if we apply a force laterally upon the key, it together with the tumbler case may be moved around within the ring until the key is brought opposite the opening P, through which it may be removed.

The effect produced by such a movement of the tumbler case is the lowering or de-

pression of the slide block C, to such extent as to carry it entirely below the stud F, and thereby leave the main bolt and its slide block face to be moved back or forth, or shot forward or back by the fixed key X. The said fixed key has its shank *a* extended through the center of the box L, its bits *b* being below the same and so arranged as, when revolved and the slide block C, is in its lowest position, to act against the sides of the lower part *c* of the groove H of the said block C, and throw the bolt forward or backward according to the direction in which the said fixed key may be turned. A handle or milled head *c'* is screwed or affixed to the fixed key X, as seen in the drawings.

From what has been above described it will readily be seen that the aforesaid rotation of the box L, must create either an elevation or depression of the slide block C, according to the direction in which said box may be turned. When the slide block is elevated to its highest position, the notch E receives the stud F, and consequently while said stud so remains in said notch it will be impossible to throw back the bolt. While the slide block is so elevated the fixed key may be entirely revolved without creating any movement of the main bolt, it being necessary to apply the opening key, (Fig. 8,) to the tumblers, and to turn back the box L, and thereby lower down the slide block C, before the fixed key can be made to operate on the slide block so as to either throw the bolt forward or backward. A common spring friction lever Z, is applied to the main bolt as seen in Fig. 2.

The aforedescribed lock presents great difficulties to a burglar who may undertake either to pick it by the usual means or to destroy it by the explosion of gunpowder or any substitute therefor.

In order to prevent the lock from being picked by pressing the tumblers against the stud S, and moving them so as to cause the said stud to enter their openings T, I arrange the stud S with respect to the said tumblers as follows: When the passage V and the passage O are brought together or in line with each other, I dispose the stud S at such a distance from the series of tumblers that when the box L, is moved around so as to carry the opening V toward the opening P it must move far enough to carry the opening V entirely or some distance beyond the opening O before the tumblers are carried up to the stud S, so as to permit it to enter their openings T.

Having thus described my invention that which I claim is a combination composed of the following elements, the same being applied to the main bolt of a lock and made to operate substantially as specified. The elements of combination are:

1. The slide block C, applied directly to the main bolt and having a notch E, made in it to receive the stud F, projecting from the underside of the face plate as set forth.

2. The said stud F, arranged as above described or in any other convenient position.

3. The circular metallic ring N, fixed on the external surface of the lock or face plate the said ring being made with the exit and entrance passages O, P, for the admission and discharge of the key by which the tumblers and their case are moved.

4. The circular revoluble tumbler case L, and series of tumblers inclosed in the same, the said tumbler case and tumblers being connected with the slide block C, as set forth and made to operate with respect to the stud S, as specified.

5. The stud S, projecting from the lock or face plate, and into the revoluble case L, and through a curved slot made through the bottom thereof as described.

6. The fixed, revoluble key X, disposed substantially as above specified, so as to operate the bolt as above explained; and as auxiliary to the aforedescribed combination I claim the peculiar manner in which I arrange the stud S, with respect to the series of tumblers or the openings T, thereof; that is to say the so placing the said stud, that the tumbler case and tumblers require to be moved through a portion of their arc of revolution sufficient to move the opening V, entirely by the opening O, before the stud can be made to enter or commence to enter the openings, or curved recesses T, of the tumblers; the said arrangement being for the purpose of preventing any person from picking the lock.

In testimony whereof I have hereto set my signature this seventeenth day of February A. D. 1848.

EDWARD KERSHAW.

Witnesses:
R. H. EDDY,
A. M. EDDY.