2 Sheets--Sheet 1.

W. HALL.

Bolts for Safe-Doors, &c.

No 141,874. Fig. 1. Patented August 19, 1873.

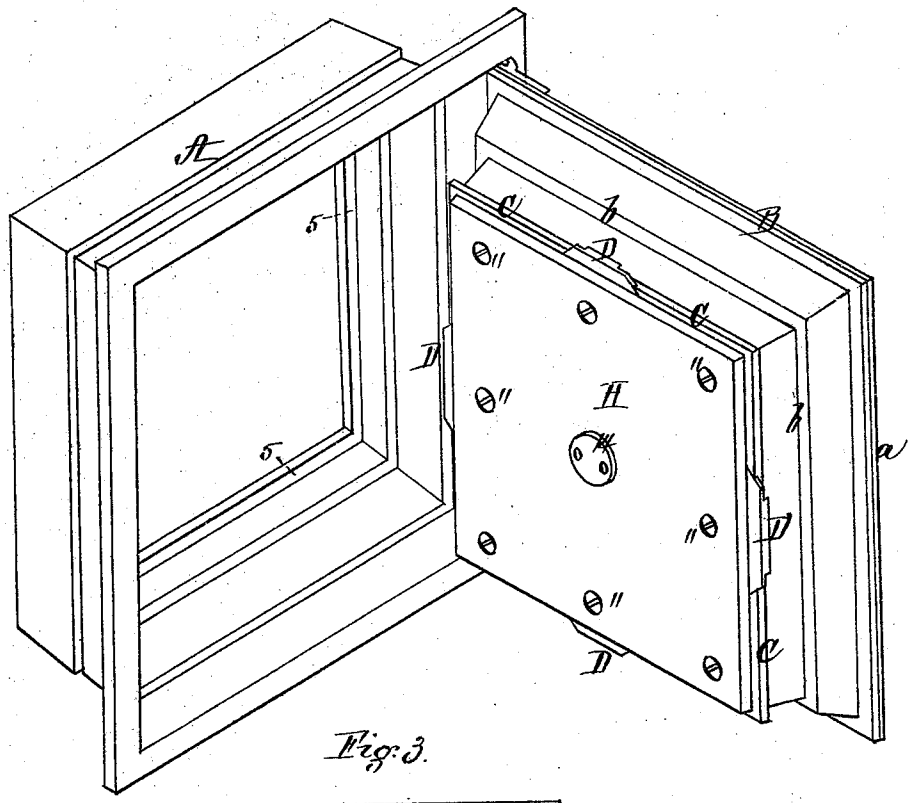
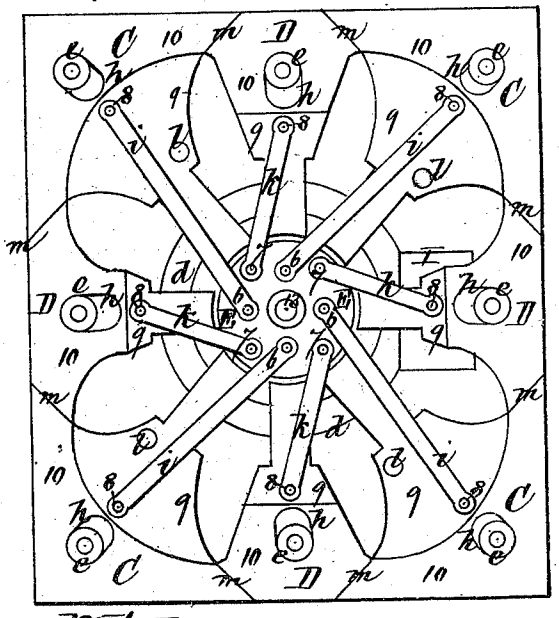


Fig. 3.



Witnesses,
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N. W. Stearns

Inventor,
William Hall

2 Sheets--Sheet 2.

W. HALL.

Bolts for Safe-Doors, &c.

No. 141,874. Fig. 2. Patented August 19, 1873.

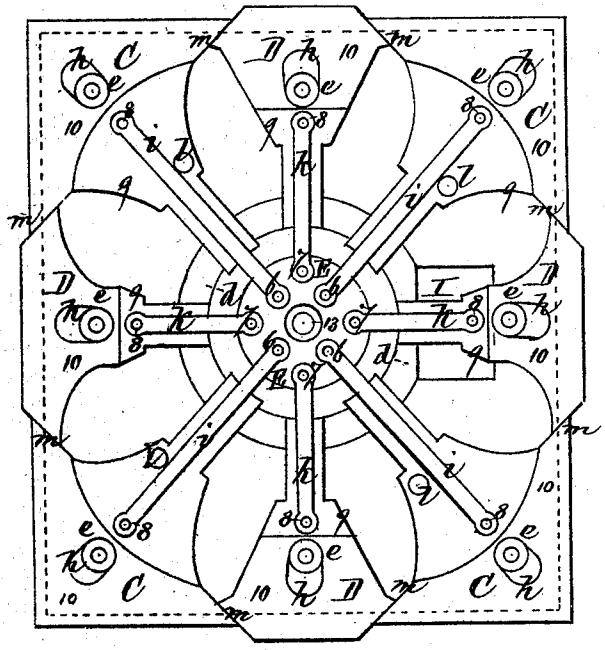
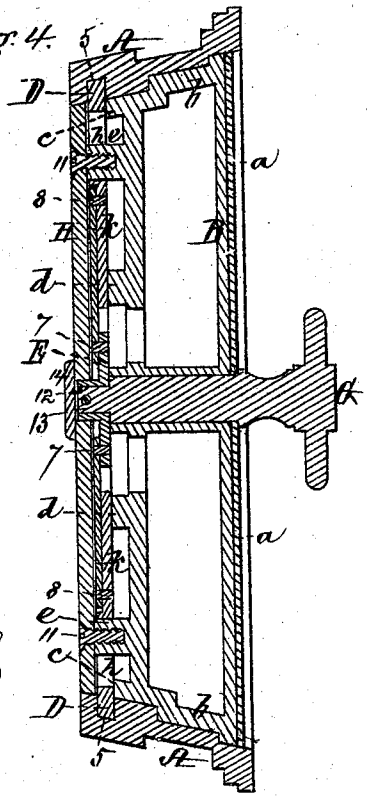


Fig. 4.



Witnesses,
P. E. Teschemacher
N. W. Stearns

Inventor,
William Hall

UNITED STATES PATENT OFFICE.

WILLIAM HALL, OF BROOKLINE, MASSACHUSETTS.

IMPROVEMENT IN BOLTS FOR SAFE-DOORS, &c.

Specification forming part of Letters Patent No. **141,874**, dated August 19, 1873; application filed June 16, 1873.

To all whom it may concern:

Be it known that I, WILLIAM HALL, of Brookline, in the county of Norfolk and State of Massachusetts, have invented an Improvement in Bolts for Doors of Safes, Vaults, &c.; of which the following is a full, clear, and exact description, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 is a perspective view of a safe-door with my improved bolts applied thereto. Fig. 2 is an elevation of the inside of the door, the covering-plate being removed to show the bolts, which are thrown out in the position they occupy when the door is locked in place. Fig. 3 is an elevation of the same, showing the position of the parts when the bolts are withdrawn. Fig. 4 is a vertical section through the door and its casing.

In a safe-door of the ordinary construction the outer plate snugly fits the front of its frame, while the inner portion of the door fits loosely therein, a space entirely around and between them being formed, through which the fire or heat can enter the safe should the outer plate become warped out of place thereby. To overcome this difficulty is the object of my invention, which consists in a series of bolts abutting against each other and extending entirely around the door, these bolts, when thrown out to lock the door, forming a continuous wall or barrier without break or interval, which will intercept the flame or heat, and effectually prevent its entrance into the safe, while at the same time additional security is afforded against the opening of the door by burglars.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A is the front portion or door-frame of the safe, to which is hinged the door B, composed of a front or outer plate, *a*, of wrought-iron, and an inner hollow portion, *b*, cast in one piece and riveted to the plate *a* in a well-known manner, the portion *b* being filled with any of the non-conducting materials used for this purpose. Around the edge of the back of the portion *b* extends a flange, *c*, and at the center is a circular flange, *d*, provided with grooves, in which slide the inner ends of a series of bolts, C D, the outer ends of which slide on the flange *c*, these bolts, when thrown out to lock the door, fitting into a continuous groove, 5, extending entirely around the inside of the door-frame. The grooves in the flange *d* serve as guides for the inner ends of the bolts, while their outer ends are guided by projections *e* extending out from the back of the portion *b* of the door, and fitting into slots *h*. The bolts C D are connected by rods *i k*, fitting over pins 6 7 8, with a central wheel or disk, E, secured to the inner end of a shaft or spindle, which extends through the front plate *a*, and is provided with a handle, G, by turning which the bolts C D are thrown out, as seen in Fig. 2, or withdrawn, as seen in Fig. 3, the pins 6 7 acting as cranks to impart the desired movements to the rods to operate the bolts. A portion, 9, of each bolt is cut away, so that the outer surface of its connecting-rod will lie in a plane inside the plane passing through the outer surface of the thicker portion 10 of the bolt. When the bolts C D are thrown out, as seen in Figs. 1, 2, and 4, they form one continuous bolt, extending entirely around the door without break or interval, which serves as an uninterrupted barrier for effectually preventing the entrance of flame or heat to the interior of the safe or vault, should the outer plate of the door be warped or injured.

The above-described system of bolts renders it much more difficult to break open the safe, as the burglar would be required to break away the entire frame on all four sides of the door in order to effect an entrance; and should he be successful in gaining access to and forcing in one bolt, its connecting-rod will be broken without affecting or moving the other rods *i k* connected with the disk E.

l are stops, against which the rods *i* come in contact when the bolts are thrown out to their full extent, these stops preventing the further turning of the handle in the same direction, which would withdraw them. The portions of the bolts C D which come in contact with each other are halved or lapped, so as to prevent the passage of flame or heat through the inclined joints *m* formed at these points. To prevent these joints from separat-

ing when the bolts are being thrown, the pins 7 are placed farther from the center of the disk E than the pins 6, in order that the bolts D may be thrown out farther, and with a quicker motion, than the bolts C, by which means the lines of their joints are constantly kept in contact. Over the bolts C D is fitted a covering-plate, H, secured in place by screws 11 passing into the projections *e*, the length of which is such that a sufficient space is left between the plate and the bolts to allow them to move freely when operated by the handle. The center of the covering-plate is provided with a circular opening, 12, for the reception of the central projecting portion 13 of the disk E, which is thereby steadied, the opening 12 being covered by a circular plate, 14, between which and the end of portion 13 is a space to allow of expansion.

In the back of the portion *b* is a recess, I, for the reception of a suitable lock, (not shown,) which is intended to securely hold the disk E, and prevent it from being turned when the bolts have been thrown out.

Instead of a series of bolts extending entirely around the door, as above described, two or more corner bolts only might be used, which, though not so effective as a series of contiguous bolts, would nevertheless prevent the entrance of the flame or heat at the corners to which the bolts were applied—an advantage of much importance, as the flame or heat is more liable to enter a safe at the corners of the door than at any other points.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A series of triangular-headed corner bolts, C, in combination with the wedge-shaped bolts D, so as to form a protection entirely around the door of a safe or vault, substantially as and for the purpose set forth.

2. The bolts C D, with their inclined joints *m*, operated together so as to prevent them from separating when thrown out, substantially as described.

3. A safe or vault door provided with triangular-headed bolts C, constructed as described, and thrown out from two or more of its corners, substantially as and for the purpose set forth.

Witness my hand this 13th day of June, A. D. 1873.

WILLIAM HALL.

In presence of—

P. E. TESCHEMACHER,

N. W. STEARNS.