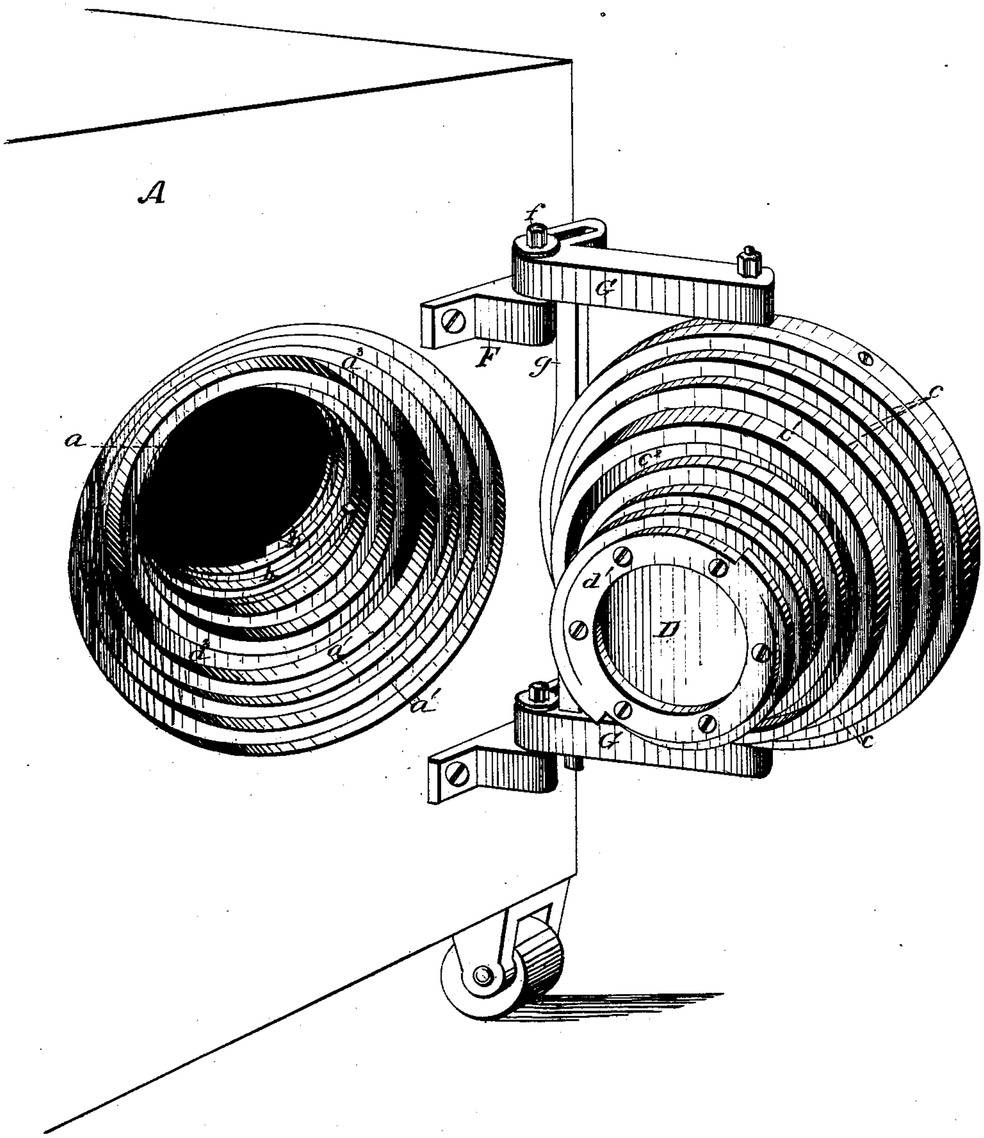
4 Sheets—Sheet 1.

P. F. KING.

HINGES AND DOORS FOR BURGLAR-PROOF SAFES.

No. 191,680. Patented June 5, 1877.

Fig. 1.



WITNESSES:
Mamie E. Stallings
Theodore S. West

INVENTOR:
PHINEAS F. KING,
BY
H. W. Beadle & Co.
ATTYS

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P. F. KING.

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Fig 2.

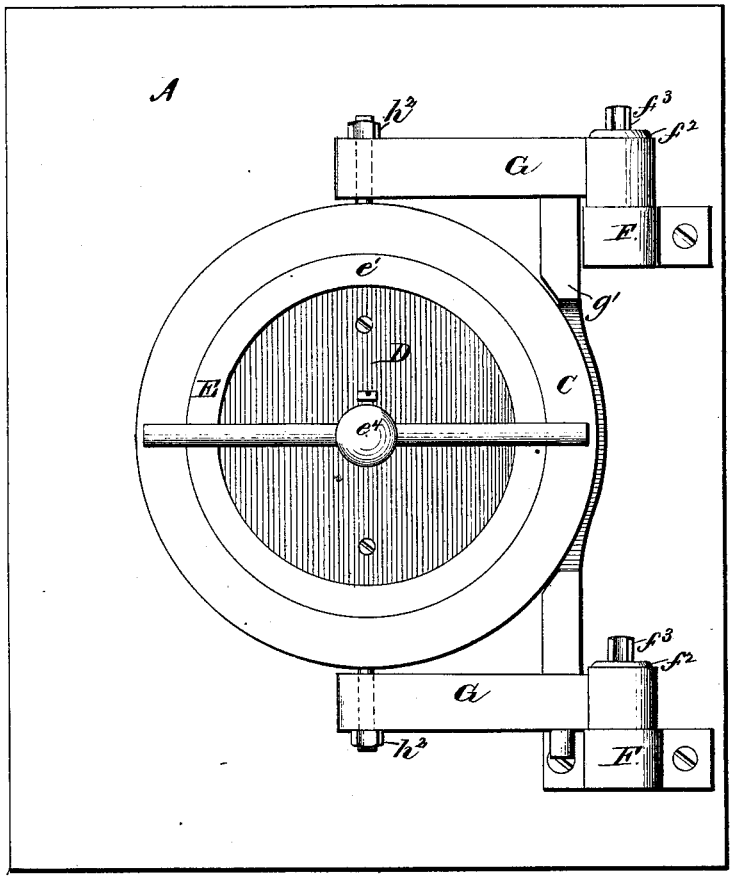
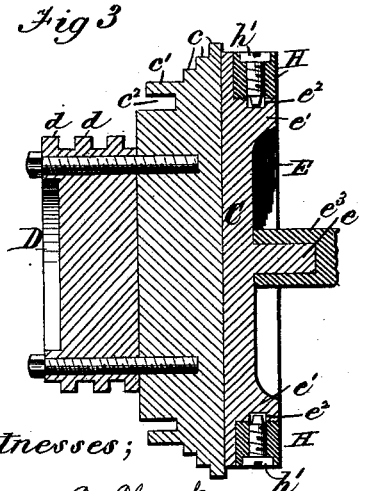
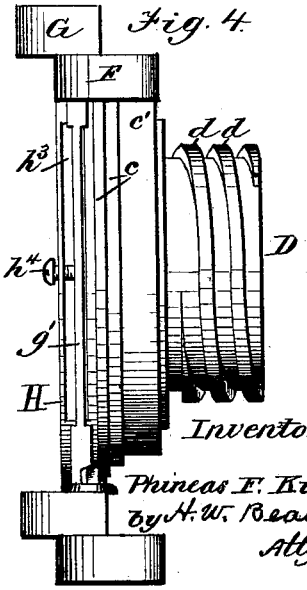


Fig 3



Witnesses;
Harry C. Clark.
Wamie B. Stallings.

Fig. 4.



Inventor
Phineas F. King
by H. W. Beadle & G.
Attys.

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P. F. KING.

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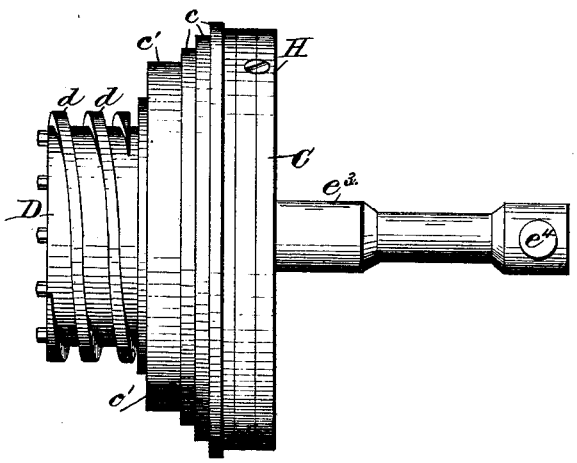
Fig 5.



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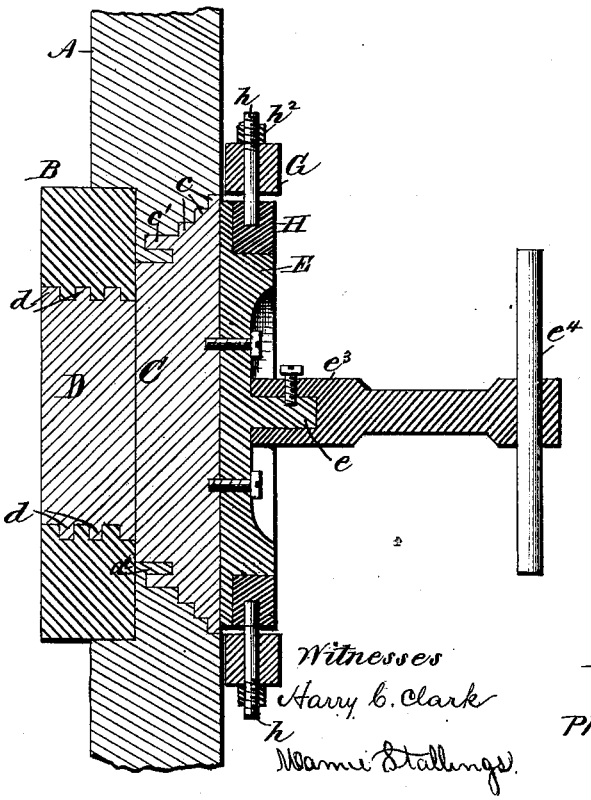
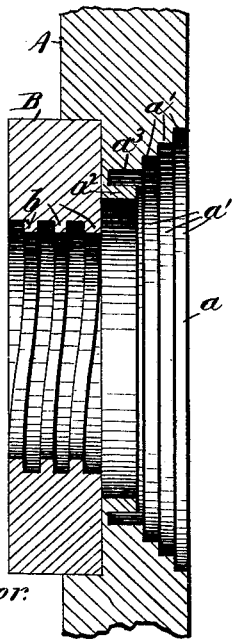


Fig. 7.



Witnesses
Harry B. Clark
Warmi Stallings

Inventor:
Phineas F. King.
by H. W. Beadle & G.
Attys

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P. F. KING.

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Fig. 8.

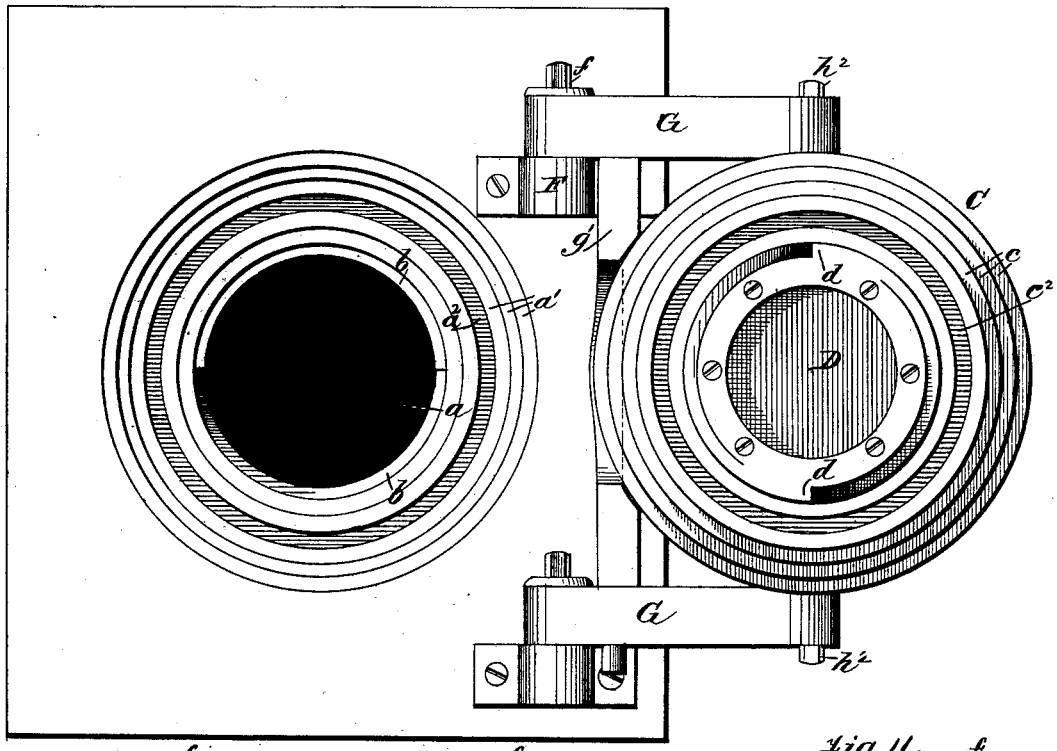


Fig 9.

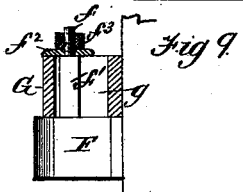


Fig 10.

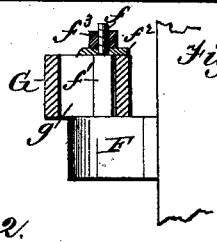


Fig 11.

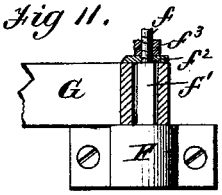


Fig 12.

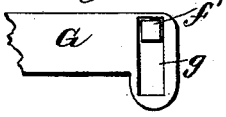
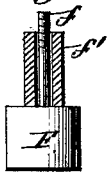


Fig 13



Witnesses;

Harry C. Clark.

Mamie B. Stallings.

Inventor.

Phineas F King.

by H. W. Beadle & Co.

Attys

UNITED STATES PATENT OFFICE.

PHINEAS F. KING, OF ST. LOUIS, MISSOURI, ASSIGNOR TO GEORGE N. BEARD AND ELEAZAR J. BEARD, OF SAME PLACE.

IMPROVEMENT IN HINGES AND DOORS FOR BURGLAR-PROOF SAFES.

Specification forming part of Letters Patent No. **191,680**, dated June 5, 1877; application filed February 2, 1877.

To all whom it may concern:

Be it known that I, PHINEAS F. KING, of St. Louis, in the county of St. Louis and State of Missouri, have invented a new and useful Improvement in Burglar-Proof Safes; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention relates to that class of burglar-proof safes which are provided with round screw-doors; and it consists, mainly, first, in providing the door and casing with double or compound screw-threads; and, second, in the special hinge mechanism for carrying the door, all of which will be fully described hereinafter.

In the drawings, Figure 1 represents a perspective view of a safe having my invention applied thereto, the door being opened. Fig. 2 represents a front elevation of the same with the door closed; Fig. 3, a vertical sectional elevation of the door detached; Fig. 4, a side elevation of the door and the hinge mechanism supporting the same; Fig. 5, a side elevation of the door detached; Fig. 6, a vertical sectional elevation of the closed door and casing; Fig. 7, a vertical sectional elevation of the casing alone; Fig. 8, a front elevation of the safe with the door open; Figs. 9, 10, 11, 12, and 13, various views of the hinge mechanism.

To enable others skilled in the art to make and use my invention, I will now proceed to describe fully its construction and manner of operation.

A represents the casing or shell of the safe, constructed generally in any proper manner, but preferably formed of alternate plates of different kinds of metal, in the manner well understood. *a* represents a circular opening of any proper size, the face of which consists of a series of inwardly-converging steps, a^1 a^1, as shown. a^2 represents an annular projection, and a^3 a recess consequently formed between the projection a^2 and the adjacent step a^1, as shown.

B represents an independent ring of any suitable material, which is secured in any proper manner, around the opening *a*, to the inner face of the safe, it being preferably held, however, in a recess, as shown. *b b* represent independent screw-threads formed upon the inner circumference of the ring, which start and terminate at opposite points of the circle, or nearly so, as shown.

C represents the door, constructed generally in any proper manner, but preferably formed, like the casing, of alternate plates of metal of different kinds. This corresponds in size, of course, with the opening which it is designed to close, and is provided with a series of diverging steps, *c c*, and an annular projection, c^1, and recess c^2, adapted to engage with the corresponding parts of the casing, as shown.

D represents a projecting portion upon the inner face of the door, which is formed of an independent piece of metal, strongly secured thereto by bolts or other proper fastening devices. *d d* represent independent screw-threads formed upon the outer circumference of the piece D, which are adapted to engage, when the door is closed, with the corresponding threads of the inner ring.

E represents a disk, forming either a part of the outer face of the door, or rigidly secured thereto, as shown, in any proper manner, and is provided with a spindle, *e*, and hub e^1, having an annular recess or groove, e^2, as shown. e^3 represents a socket rigidly secured to the spindle *e*, which is provided with a proper handle, e^4, by means of which the disk and door are revolved.

F F represent brackets rigidly fixed to the face of the safe at the proper points, as shown, which are provided with the threaded pintles *f f*, having the revolving boxes f^1, washers f^2, and nuts f^3, as shown.

G G represent hinge-bars, having at one end the elongated slots or sockets *g*, and at the other proper openings for the studs or pintles *h*, as shown. *g'* represents an intermediate connecting-bar, by means of which the hinge-bars are united for harmonious movement.

H represents a ring, inclosing the hub e^1 of the disk E, which is provided with the threaded studs or pintles *h h*, projecting through the proper openings in the hinge-bars, as shown. h^1 h^1 represent pins projecting from the inner circumference of the ring H into the annular

recess e^2 of the disk E, by means of which the latter is strongly supported without interference with its freedom of revolution. h^2 h^2 represent nuts upon the threaded pintles h h, by means of which the door may be adjusted in a vertical plane. h^3 represents a recess or cut-away place in the ring H, in which lies the central portion of the connecting-bar g', as shown in Fig. 4. h^4 represents an adjusting-screw extending from the ring into the recess h^3, as shown, by means of which and the bar g' the oscillations of the door on the pintles h h may be limited.

The operation will be readily understood.

If the door is closed, but unlocked, it may be opened by simply revolving the handle e^4 in the proper direction. By means of this revolution the screw-threads are caused, of course, to move the door outward from the casing until the limits of the threads are reached, and the parts consequently are disengaged from each other. The door is necessarily moved by the action of the screw-threads in a plane parallel to the face of the safe, and the hinge-bars attached thereto move with them in the same plane, but without cramping or binding, such action being permitted by the elongated slots g, as shown. The threads being disengaged, the door may be swung upon its hinges into its extreme backward position.

In closing the door the operation is necessarily reversed. The door is turned upon its hinges into proper position in front of the opening, and the handle revolved until the threads take and draw it into its proper place.

Some of the advantages of the described construction are as follows:

By the employment of two independent threads, starting at opposite points, the door is caused, in entering or leaving, to move equally upon each side, so that all liability to jam or cramp is avoided. The strength and holding power of two threads also are obtained by giving the door a single revolution—a result impossible when a single thread is employed.

The construction of the hinge devices is quite simple, and yet well adapted for the purposes designed.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A safe having its door and casing each provided with double screw-threads, substantially as described.

2. The door C, having the independent portion D provided with a screw-thread on its periphery, as and for the purpose described.

3. The combination of the ring, the pintles h h, and adjusting-nuts with the hinge-bars, as described.

4. The combination of the hinge-bars, the connecting-bar g', the ring, and the adjusting-screw h^4, as described.

5. The combination of the hinge-bars, having elongated slots, and the pintles, having the boxes, as described.

6. In combination with a door which oscillates upon a central vertical axis, the adjusting mechanism for limiting its oscillations, as described.

7. In combination with hinge-bars, having slotted bearings, substantially as described, a screw-threaded door, adapted, substantially as described, to move the hinges in their bearings.

This specification signed and witnessed this 18th day of January, 1877.

PHINEAS F. KING.

Witnesses:

WM. J. DWYER,

CHAS. C. NICHOLLS.