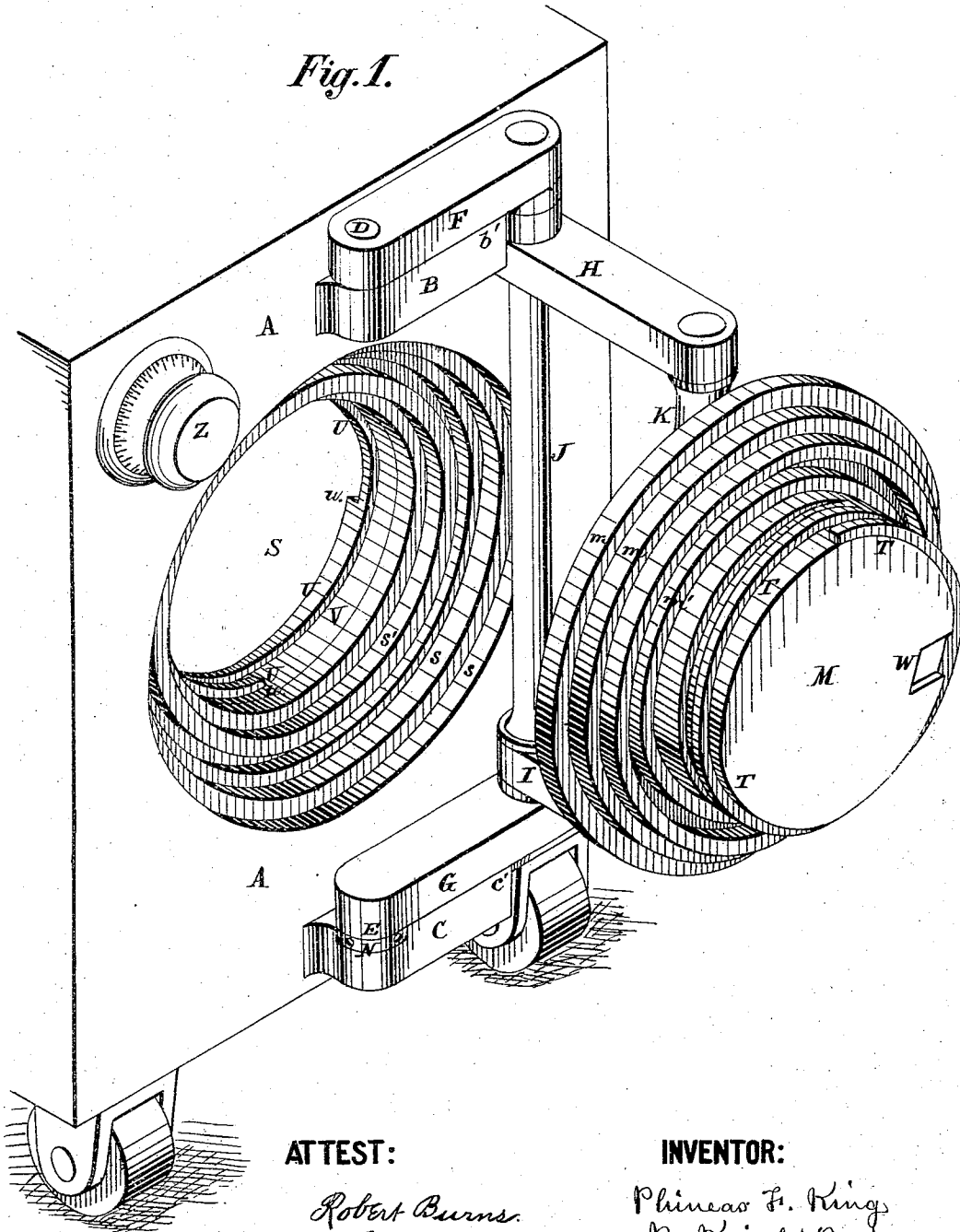


P. F. KING.
Hinges for Safe Doors.

No. 153,348.

Patented July 21, 1874.

Fig. 1.



ATTEST:

Robert Burns.
H. P. Farmer.

INVENTOR:

Phineas F. King
By Knight Bro.
Atty.

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Fig. 2.

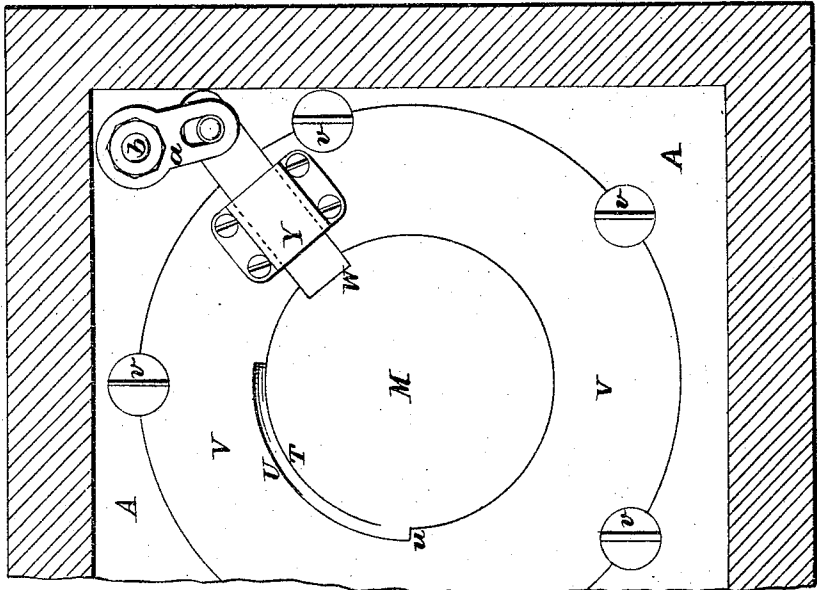


Fig. 3.

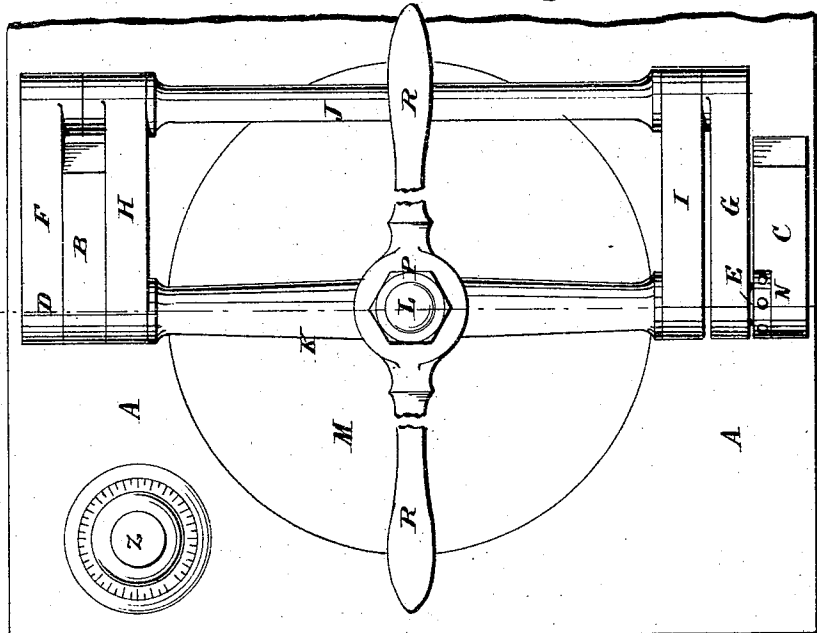
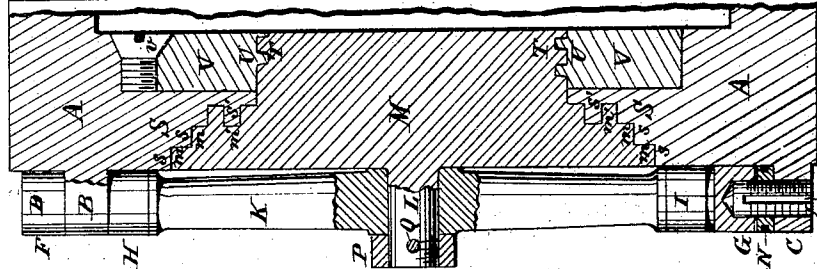


Fig. 4.



ATTEST: Robert Burns.
H. J. Tanner.

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UNITED STATES PATENT OFFICE.

PHINEAS F. KING, OF ST. LOUIS, MISSOURI, ASSIGNOR TO BEARD & BROTHER, OF SAME PLACE.

IMPROVEMENT IN HINGES FOR SAFE-DOORS.

Specification forming part of Letters Patent No. **153,348**, dated July 21, 1874; application filed April 6, 1874.

To all whom it may concern:

Be it known that I, PHINEAS F. KING, of St. Louis, St. Louis county, Missouri, have invented a certain new and useful Improvement in Burglar-Proof Safes, of which the following is a specification:

My invention consists of a combination of parts constituting a peculiar parallel-motion crane, operating as hereinafter set forth, to support a safe-door and carry the same to and from its seat in a line perpendicular to the face of the safe.

In the drawings, Figure 1 is a perspective view of a safe-front, showing the door open. Fig. 2 is a rear view in elevation of part of the front wall of the safe with the door closed. Fig. 3 is a front elevation of same with the door closed. Fig. 4 is a vertical section through the door and case at line *x x*, Fig. 3.

A is the front wall of the safe, having above and below the doorway, and in line with its center, brackets B C, carrying the pintle-pins D E of the radius-bars F G. These radius-bars are connected together, and jointed to similar bars H I by a vertical rod, J. K is a vertical bar, whose ends turn in the ends of the radius-bars H and I. At the mid-height of the bar K is a socket, in which turns the axis pintle or arbor L, on which the door M is supported. The lower pintle E may be a simple pin fixed either in the bracket C or bar G, and turning freely in the other; but this pintle is shown in a more perfect form in Fig. 4, where it takes the nature of a step-pin, and rests in a socket in the bottom of bar G, which turns upon it. The step-pin E is supported in a screw-nut, N, which rests upon the top of the bracket C, and by which the step-pin may be adjusted vertically to compensate for any wear or sag in the crane apparatus, on which the door is supported. The step-pin E is prevented from turning by a spline occupying a key-seat in the bracket, or by a groove, O, occupied by a fixed pin or lug of the bracket, which enters the groove and prevents the rotation of the pin E, while at the same time it permits the said vertical adjustment. This adjusting arrangement may, if preferred, be placed at the lower end of the bar K, its ac-

tion and effect being similar. P is a nut screwed on the arbor L to hold it in its socket, and the nut is prevented from unscrewing by a transverse pin, Q, or other means. R is a brake or two-ended lever, which fits the angular nut P, (as a wrench,) and by which the door may be turned in its bearing. The door consists, in its most perfect form, of a number of disks of metal varying in hardness and character, so as to render perforation of the door by drilling impossible. The periphery of the door is formed into a number of circumferential steps, *m m*, &c., and the doorway is also turned out in steps *s s*, &c., to fit the door, and these surfaces may be ground together, so as to render the joint of the door air-tight, if desired, the door being ground in in a similar manner to that employed in making the steam-tight joint to the cylinder-head of a steam-engine. *m'* and *s'* are, respectively, the interlocking ribs and grooves on the door and doorway. Around the periphery of the door, in proximity to the inner face, is a screw-thread, T, engaging a suitable female or interior screw-thread, U, in the ring V. The ring V is inserted in a suitable circular rabbeted recess in the wall of the safe, and may be flush with the said face, in the manner shown, the thread U standing out into the doorway, and having at each end an abutment, *u*, acting as stops to the rotation of the door when screwing it into place, and stopping it just at the right point—namely, when the door is tightly fitted in the doorway, and is in proper position for the recess W to receive the bolt Y of the permutation-lock, whose handle is shown at Z, Fig. 1. The bolt Y has bearings in the safe-wall A, and is moved by a slotted arm, *a*, on the spindle *b*, or by other means. The ring V may be secured in place by screws *v*, halved into the periphery of the ring and into the safe-wall A.

The lock is shown at Z placed in the wall of the safe at a distance from the door, instead of in the door, as has been the practice hitherto. This is done to preserve the door from chambering out or perforation necessary when the lock is attached thereto or inserted therein, as in all cases it is necessary that

some communication should be had by means of the lock to the inside of the safe, or to the bolts by which the door is held shut.

The operation of my door is as follows: Supposing the door to be locked shut, the bolt W is first drawn back. The door may then be unscrewed. In moving outward it will be observed that the door has necessarily to go in a straight line perpendicular to the front of the safe, not only the screw attachment T U, but the tight-fitting sides *m m s s m' s'*, necessitating this straight movement, and it will be seen that no common hinges would fill the requirements of the case; and, further, that a simple crane support for the arbor L would not suffice; hence the necessity for the parallel-motion support D E F G H I J K, which allows the door to be moved in a perfectly straight line when entering or leaving the door-

way, and also allows the door to be swung aside out of the way when open. The brackets B C have an extended bearing, as shown at *b' c'*, so as to give support to the bars D E when the said bars are folded back near to the safe-wall, as is the case when the door is either closed or opened wide.

I claim as my invention—

The combination of the brackets B C, pintle-pins D E, radius-bars F G H I, and vertical rods J K, constructed and operating substantially as herein shown and described, with a door M, attached to the latter, for the purpose set forth.

PHINEAS F. KING.

Witnesses:

SAML. KNIGHT,
ROBERT BURNS.