No. 662,434. Patented Nov. 27, 1900.

H. D. HIBBARD.

SAFE HINGE.

(Application filed May 11, 1900.)

(No Model.)

Fig. 1.

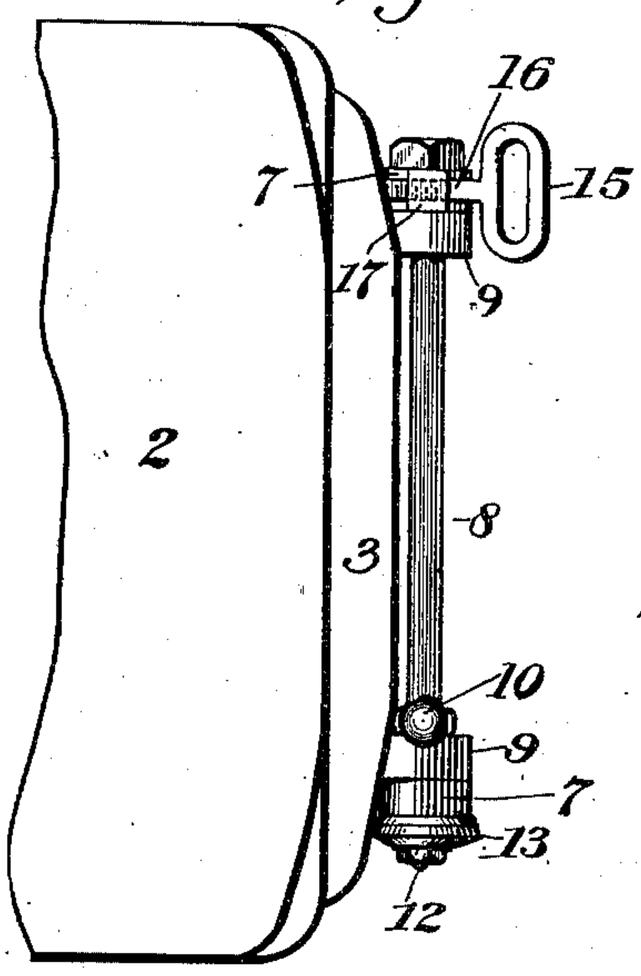


Fig. 2.

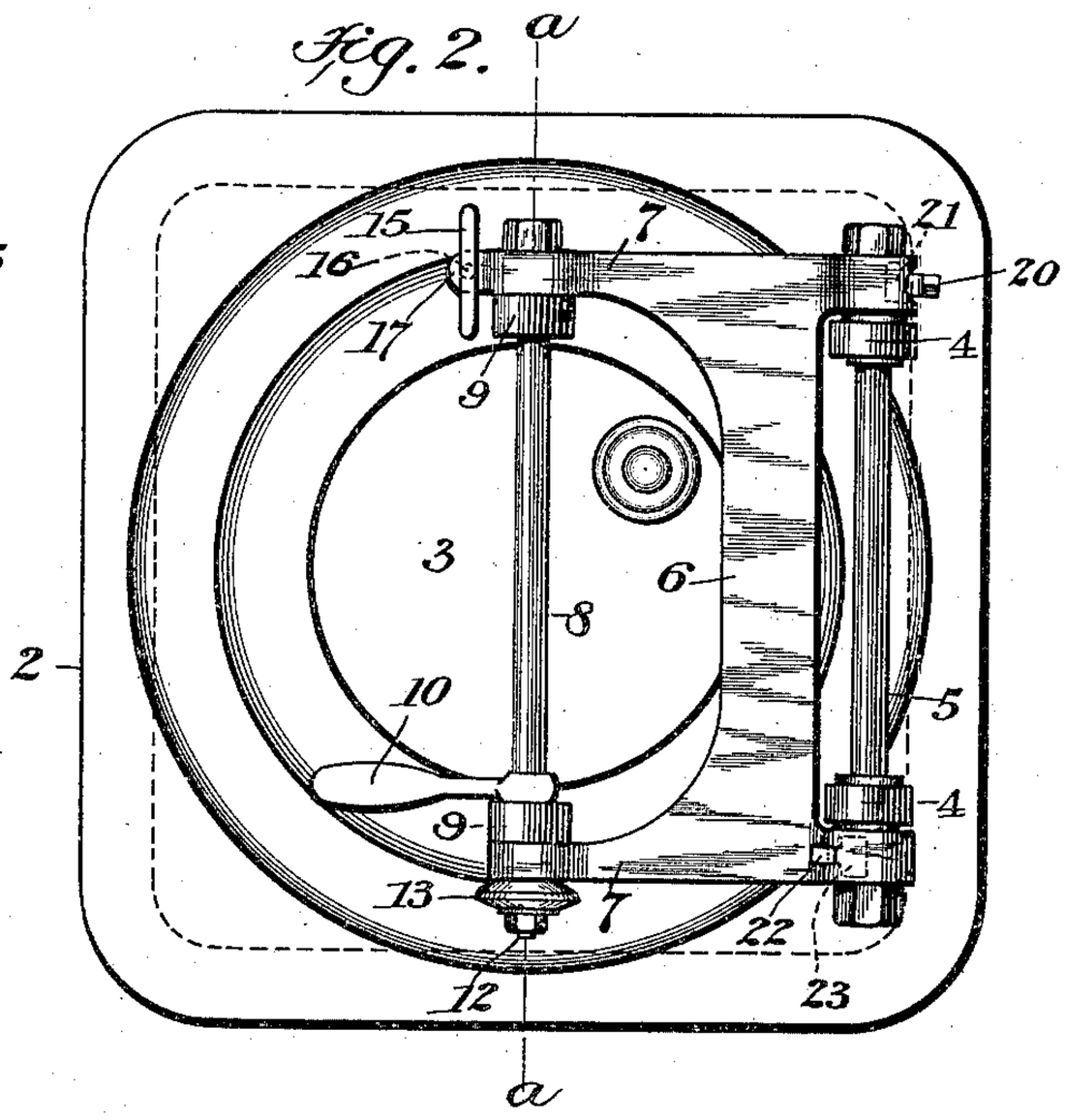
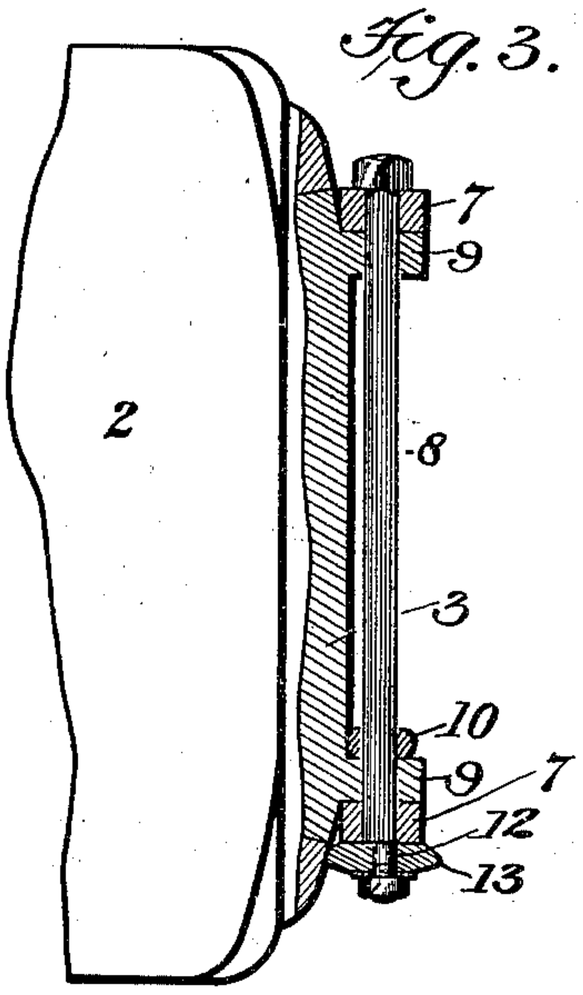


Fig. 3.



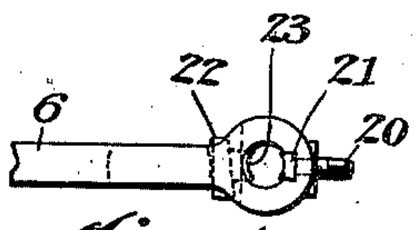


Fig. 4.

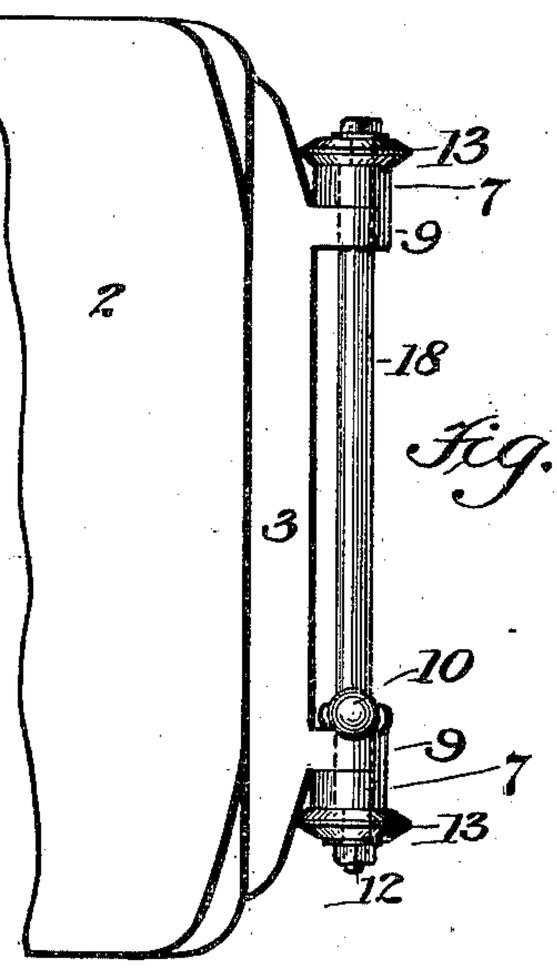


Fig. 5.

Witnesses:-
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UNITED STATES PATENT OFFICE.

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SAFE-HINGE.

SPECIFICATION forming part of Letters Patent No. 662,434, dated November 27, 1900.

Original application filed May 7, 1898, Serial No. 679,776. Divided and this application filed May 11, 1900. Serial No. 16,250.

(No model.)

To all whom it may concern:

Be it known that I, HENRY D. HIBBARD, a citizen of the United States, residing in Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Safe or Vault Hinges, of which the following is a specification.

This invention relates to safe or vault hinges, one object being to provide an improved hinge for the safe or vault door.

A further object of the invention is to provide, in connection with means for supporting the door on the body, means for limiting the swinging movement of the door relatively to said supporting means.

A further object of the invention is to provide, in connection with means for supporting the door on the body, improved means effective to overcome friction and inertia of the door and start such door open after the same is unlocked.

A further object of the invention is to provide, in connection with a crane-hinge for supporting a safe or vault door, improved means for adjusting such door thereby, to allow or admit of a close fit thereof in its seat.

In the drawings accompanying and forming part of this specification, Figure 1 is a side view of the front portion of one form of safe with the door connected to the body by this improved hinge. Fig. 2 is a front view thereof. Fig. 3 is a vertical sectional view taken in line *a a*, Fig. 2, illustrating the means for starting the door open. Fig. 4 is a detail top view of one part of the crane-hinge, illustrating the means for adjusting the door to its seat; and Fig. 5 is a view illustrating a modification of the means for starting the door open.

Similar characters of reference indicate corresponding parts in the different figures of the drawings.

As a preface to a further description of the present improvement it is to be understood that the improved hinge mechanism shown herein may be used in connection with various forms of safes or vaults and is therefore not limited to the construction of safe shown herein, which comprises a suitable safe-body 2, provided with a circular door-opening, and a circular door 3, adapted to fit in said opening. These parts may be constructed, if desired, in a substantially similar manner to that shown and described in my contemporaneously-pending application, Serial No. 679,776, filed May 7, 1898, of which the present case is a division.

The safe-body 2 is shown provided with a pair of forwardly-projecting ears or brackets 4, connected with which by means of a suitable pin or pintle 5 is this improved crane-hinge 6, the opposite ends of the arms 7 of which are connected with the door 3 by means of a suitable pin or pintle 8, which extends through such arms 7 and through ears or brackets 9, projecting forwardly of the door.

In the present instance means are provided for starting the door open. This means comprises a suitable lever or handle 10, rigidly connected to the door pin or pintle 8, whereby such pintle may be partially rotated. The lower end of this pintle is provided with an eccentric extension 12, on which is journaled a wheel or roll 13, adapted to be nearly in contact with the adjacent surface of the safe-body when the door is closed, whereby when the pin or pintle 8 is rotated by the handle this wheel will be brought into firm and slightly-rolling contact with the safe-body, and thereby draw the door outward to the extent of a fraction of an inch and aid in overcoming friction, inertia, and air-pressure in commencing to open the door after it has been unlocked. In another form thereof (shown in Fig. 5) the upper end of the pintle or pin 18 may also be provided with an eccentric extension for the reception of a similar wheel or roll, whereby strong pressure can be exerted both at the top and bottom of the door to start the same open. By locating the pin or pintle connecting the door with the hinge in a line substantially centrally of the door the wheel or wheels carried by such pin or pintle are effective to open the entire door by one operation of the handle carried on said pintle—that is to say, on shifting the handle all parts of the door are pulled out simultaneously from the jamb—whereas in those construc-

tions where the starting means is not supported in a line located centrally of the door, but at one edge or side thereof, only one side of the door can be opened by this means, it being necessary to provide other means for the opposite side of the door or to pull it open by hand.

To pull the door open, so as to reach the interior of the safe, a suitable handle 15 is provided, which in the present instance not only constitutes a means for opening the door, but also a gage for limiting the oscillation of the door upon its pin or pintle 8, and for this purpose the handle 15 is shown provided with a threaded shank 16, turned into a projection or lug 17 of one, as the upper, arm 7 of the crane-hinge, the inner end of which threaded shank engages the door, whereby on adjustment this handle acts as a set-gage to determine the amount of oscillation to be allowed the door upon its pin 8. This amount of oscillation should only be sufficient to permit the door to be properly shut and opened, and which can be readily regulated by screwing the handle in or out.

In connection with the present hinge mechanism improved means is provided for adjusting the bearings of the hinge, so as to shift the door farther to the right or left or to shift it higher or lower or to shift it in both directions, as required. In practice even though the measurements of the door and its doorway are carefully made and the parts are lined up with accuracy nevertheless there is a chance that the door through slight swinging of the hinge or through other causes may not when brought toward its closed position coincide exactly with its seat in the jamb, and therefore it is desirable that some means be provided to adjust the door so that it will properly fit its seat when it is closed. For this purpose a screw 20 is shown tapped into the crane-hinge at its upper bearing with the body-pintle 5, at its outer side thereof, (see Figs. 2 and 4,) and acts on a suitable bearing-block 21, by which the upper bearing of the hinge may be adjusted at will. A tapered key 22 is driven transversely through the crane-hinge at its lower bearing with said pintle and at the inner side thereof and acts on a similar bearing-block 23, by which the lower bearing of the crane-hinge can be adjusted by turning the screw inward, so as to lift the door and move it to the right, and by shifting the key so as to adjust its bearing in the opposite direction—that is, inward—so as to lift the door and move it to the left, the door is raised without affecting its position laterally. By actuating the screw and key so as to shift both of the bearing-blocks in the same direction the door may be shifted bodily to the right or left.

From the foregoing it will be seen that in connection with a simple means for supporting the door on the safe-body there is also provided means for limiting the swinging movement of such door relatively to such supporting means, means for adjusting the position of the door relatively to its seat, and means for overcoming friction and inertia and starting open the door.

In conclusion I desire to state that instead of connecting the ears of the body or door with the crane-hinge by a single pin or pintle the same result may be accomplished by the provision of a pair of pins or pintles, so that the expression in the claims "a pin or pintle" wherever it occurs is to be understood to include one or more pins or pintles, since the mechanism shown and described may be used without change, whether one or a plurality of pins be used to secure the hinge to the door or to the body.

I claim as my invention—

1. A safe or vault hinge comprising the following elements, a crane member, a pintle adapted to be supported by the body of a safe, a pintle adapted to be located in a line substantially centrally of the door, a device carried by said crane member for limiting the movement of the door relative to such member, eccentrically-operative means carried by said centrally-located pintle, and effective to overcome friction, inertia and air-pressure of the door and start all parts of such door open at the same time, and means carried by said crane member and located in position to coact with the body-pintle for adjusting said crane member and thereby the door relative to its doorway.

2. A safe or vault hinge comprising the following elements, a crane member, a pintle adapted to be supported by the body of a safe, a pintle adapted to be located in a line substantially centrally of the door, a device carried by said crane member for limiting the movement of the door relative to such member, and eccentrically-operative means carried by said centrally-located pintle, and effective to overcome friction, inertia and air-pressure of the door and start all parts of such door open at the same time.

3. A safe or vault hinge comprising the following elements, a crane member, a pintle adapted to be supported by the body of a safe, a pintle adapted to be located in a line substantially centrally of the door, means carried by said centrally-located pintle and effective to overcome friction, inertia and air-pressure of the door and start all parts of such door open at the same time, and means carried by said crane member and coacting with the body-pintle for adjusting said crane member and thereby the door relative to its doorway.

4. The combination with a safe or vault body having a doorway, and with a door therefor, of means for supporting said door on said body; and means for limiting the movement of said door relatively to said supporting means.

5. The combination with a safe or vault body having a doorway, and with a door there-

for, of a crane-hinge supporting said door on said body; and means for limiting the movement of said door relatively to said hinge.

6. The combination with a safe or vault body having a doorway, with a door therefor, of a crane-hinge supporting said door on said body; and means comprising a set-gage for limiting the movement of said door relatively to said hinge.

7. The combination with a safe or vault body having a doorway, and with a door therefor, of a crane-hinge supporting said door on said body; and a combined handle and set-gage carried by said crane-hinge and effective to swing the door open, and also to limit the oscillatory movement of the door relative to said crane-hinge.

8. In a safe, the combination with a body, and a door, of a crane-hinge supporting said door on said body; a handle having a threaded shank tapped through the hinge at a point outside of its pivotal connection with the door and operative to perform the double function of a handle to swing the door open, and of a gage to limit the turning of the door relatively to its hinge, substantially as described.

9. The combination, with a safe or vault body having a doorway and with a door therefor, of a crane-hinge pivotally connected to said body; a pintle connecting said door with said hinge adjacent to the forward ends of the forwardly-extending arms thereof and located in a line substantially centrally of such door; and means carried by said centrally-located pintle, whereby when shifted into contact with the body it will overcome friction, inertia and air-pressure of the door and start all parts of such door from the jamb at one and the same time.

10. The combination, with a safe or vault body having a doorway and with a door therefor, of a crane-hinge pivotally connected to said door-body; a pintle connecting the door with said hinge adjacent to the forward ends of the forwardly-extending arms thereof and located in a line substantially centrally of such door; a pair of eccentric devices carried by said centrally-located pintle one in position to engage the safe-body above the door and the other in position to engage said safe-body below the door whereby when said devices are shifted into contact with said body they are effective to overcome friction, inertia, and air-pressure of the door and start all parts of such door open at one and the same time; and a lever secured to said centrally-located pintle for rotating the same and thereby said eccentric devices.

11. In a safe, the combination, with a body and a door, of a hinge connected to said body; a pin connecting said door with said hinge and having an eccentric portion; a handle rigidly secured to said pin for turning it; a wheel loosely mounted on said eccentric portion and operative to perform the double function of aiding to support the door and applying a great force through a short path to start the door from its closed position, substantially as described.

12. The combination with a safe or vault body having a doorway and forwardly-extending ears, and with a door, of a crane-hinge connected with said door; a pin or pintle connecting said hinge with the ears of said body; a bearing-block and an adjustable screw carried by said crane-hinge at its point of connection with one end of said pin or pintle; and a key and bearing-block carried by said hinge at its point of connection with the other end of said pin or pintle, whereby on the adjustment of said devices the door can be adjusted to properly fit its seat in the doorway.

13. The combination, with a safe or vault body having a doorway and with a door therefor, of a crane-hinge for supporting said door on said body; a pintle connecting said hinge with said body; and door-adjusting means carried by said hinge at its point of connection with the upper and lower ends of said pintle and including a key.

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Witnesses:
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