

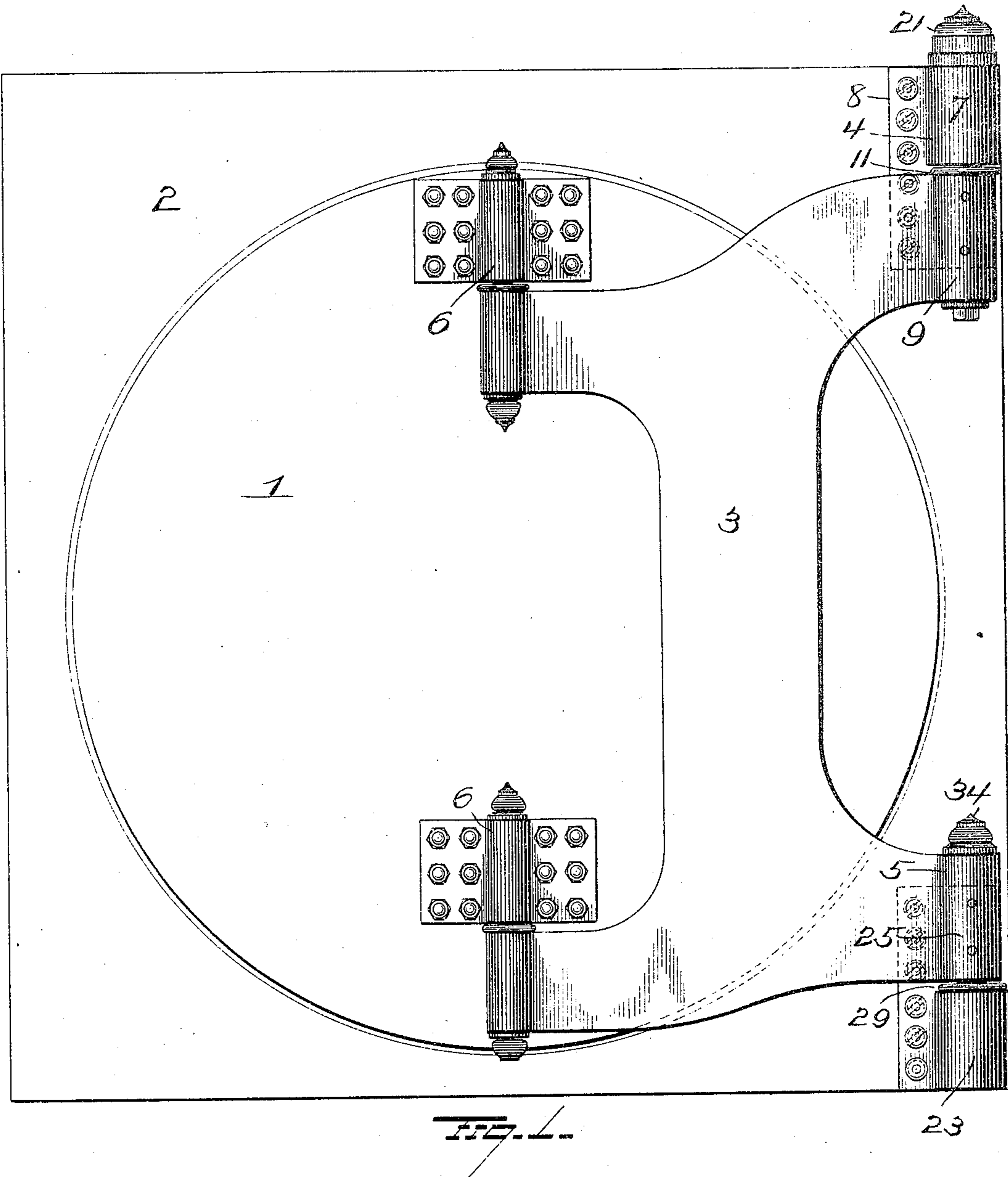
No. 793,703.

PATENTED JULY 4, 1905.

J. H. WILLIAMS.
HINGE FOR SAFE OR VAULT DOORS.

APPLICATION FILED JUNE 18, 1904.

2 SHEETS—SHEET 1.



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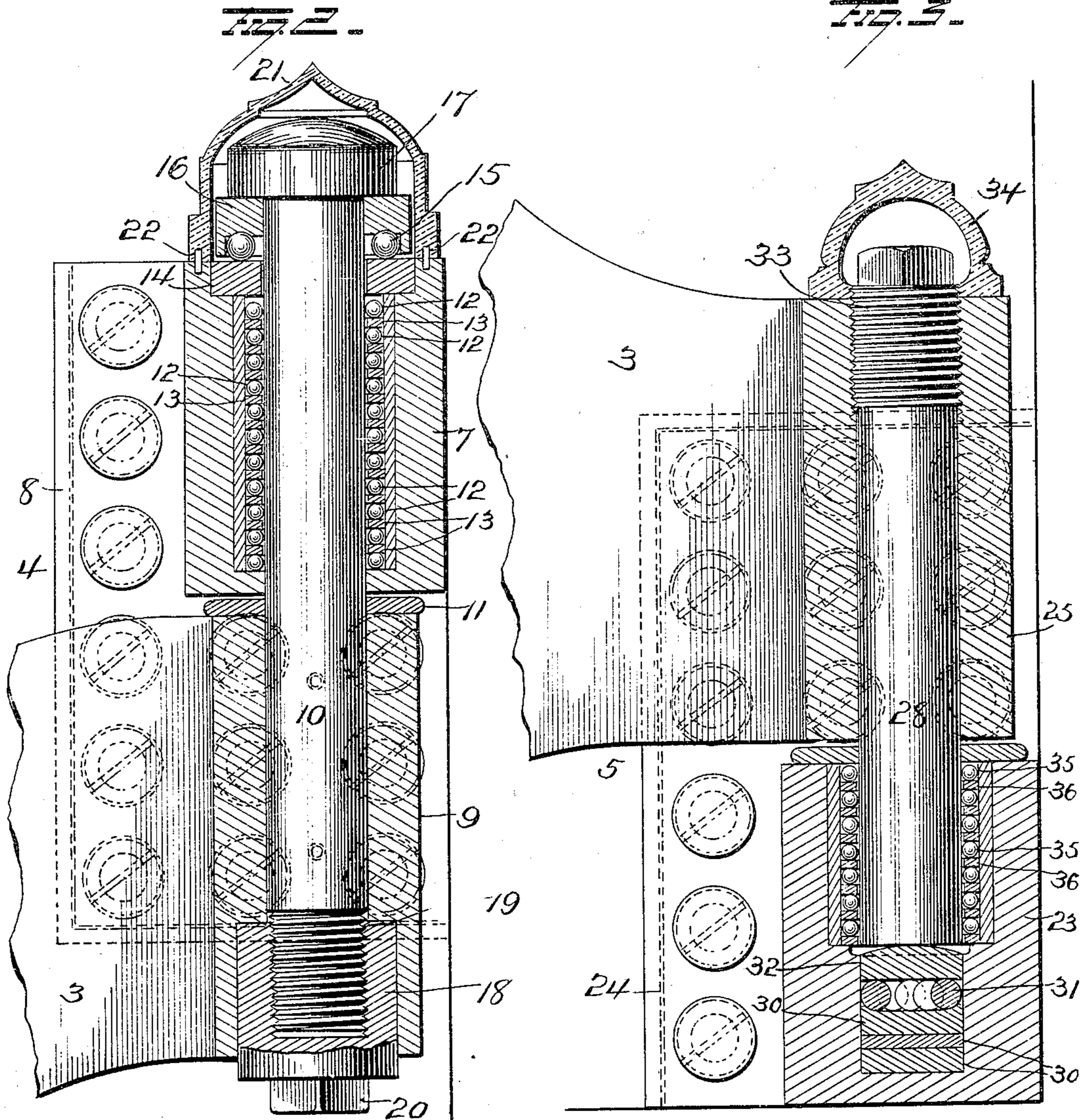
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UNITED STATES PATENT OFFICE.

JAMES HENRY WILLIAMS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR
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HINGE FOR SAFE OR VAULT DOORS.

SPECIFICATION forming part of Letters Patent No. 793,703, dated July 4, 1905.

Application filed June 18, 1904. Serial No. 213,160.

To all whom it may concern:

Be it known that I, JAMES HENRY WILLIAMS, a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have
5 invented certain new and useful Improvements in Hinges for Safe or Vault Doors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as
10 appertains to make and use the same.

My invention relates to an improved hinge for safe and vault doors, and more particularly to the construction of hinge connecting the door-supporting crane with the safe or
15 vault, the object of the invention being to provide improvements of this character which will be ball-bearing and capable of adjustment and ready separation of parts to compensate for wear and permit the easy removal of the
20 crane when desired.

With this and other objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully herein-
25 after described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in elevation of a safe or vault door, showing my improved hinge construction in vertical section. Fig. 2 is an enlarged view,
30 in vertical section, of the upper hinge connection; and Fig. 3 is an enlarged view, in vertical section, of the lower hinge connection.

1 represents a safe or vault door of the circular type, 2 the vestibule, and 3 the crane to support the door, connected at one end to the vestibule by my improved hinges 4 and 5, to
35 be hereinafter described, and at its other end connected to the door by hinges 6, described and claimed in a separate application.

40 The upper hinge 4 comprises a bearing-sleeve 7, integral with a plate 8, securely bolted or riveted to the vestibule 2, and said sleeve is located above and in alinement with a sleeve 9 at the end of crane 3, and a journal 10 is lo-
45 cated in said sleeves, and a spacing-washer 11 is located thereon between the sleeves. The sleeve 7 has a cylindrical bore of greater diameter than journal 10, permitting the em-

ployment of several series of balls 12 with spacing-washers 13 between them, and the up- 50
per end of said sleeve 7 is recessed to receive a ring 14. An annular series of balls 15 are located on said ring 14, and a grooved ring 16 is supported on said balls 15, and the en-
55 larged head 17 of the journal 10 rests on the ring 16.

The lower end of the journal 10 in crane-sleeve 9 is screw-threaded, and the lower end of the sleeve is counterbored to receive an
60 adjusting-nut 18, bearing against a shoulder 19 of the sleeve 9 and serving to adjust the journal to compensate for wear or permit the easy separation of the hinge members when desired. This adjusting-nut 18 is preferably
65 made with a closed end to exclude dirt and grit and has an angular extension 20 to receive a wrench and permit ready adjustment thereof.

An ornamental cap 21 is secured by dowel-pins 22 or otherwise to the top of sleeve 7 to
70 inclose and protect the upper end of the bearing.

The lower member 23 of hinge 5 comprises a sleeve with closed lower end and integral with a plate 24 securely bolted or riveted to
75 the vestibule, and said sleeve alines with a sleeve 25 on crane 3 to receive a journal 28, located in both sleeves, and has a spacing-washer 29 thereon between the sleeves.

In the bottom of closed sleeve 23 washers 80
30 are located, a series of balls 31 being located thereon, and a washer 32 on top of the balls and made with a convex upper face to receive the thrust-bearing of the lower end of journal 28, said journal being adjusted by a
85 screw-plug 33, screwed into the upper end of sleeve 25 and bearing against the end of journal 28, and an ornamental cap 34 is secured on the upper end of sleeve 24 in any approved
90 manner and incloses plug 33.

The lower sleeve 23 is made with a cylindrical bore of greater diameter than the jour-
nal 28 to receive several series of balls 35 around the journal with spacing-washers 36 between them, and thereby reduce the friction 95
to a minimum.

A great many slight changes might be made in the general form and arrangement of parts described without departing from my invention, and hence I would have it understood that
5 I do not restrict myself to the precise details set forth, but consider myself at liberty to make such slight changes and alterations as fairly fall within the spirit and scope of my invention.

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

1. A hinge for safe or vault doors, comprising two alined sleeves, a journal in said sleeves
15 having an enlarged head thereon, roller-bearings between the head and one sleeve, and means in the other sleeve for adjusting the journal longitudinally.

2. A hinge for safe or vault doors, comprising two alined sleeves, a journal in said sleeves
20 having an enlarged head thereon, roller-bearings between the head and one sleeve, other

roller-bearings in said sleeve around the journal, and a threaded nut in the end of the other sleeve screwed against a shoulder thereof and
25 adapted to adjust the journal longitudinally.

3. A hinge for safe or vault doors, comprising alined sleeves, a journal in said sleeves, one of said sleeves having a chamber surrounding the journal, balls located in said
30 chamber, a ring encircling the journal and closing one end of said ball-chamber, a second ring encircling the journal and spaced from said first-mentioned ring, balls between said
35 rings, and a head on the journal resting against said second ring.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JAMES HENRY WILLIAMS.

Witnesses:

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WILLIAM C. WEISBROD.