No. 845,057. PATENTED FEB. 26, 1907.

J. W. CRAMER.

SAFE.

APPLICATION FILED FEB. 19, 1906.

2 SHEETS—SHEET 1.

Fig 1

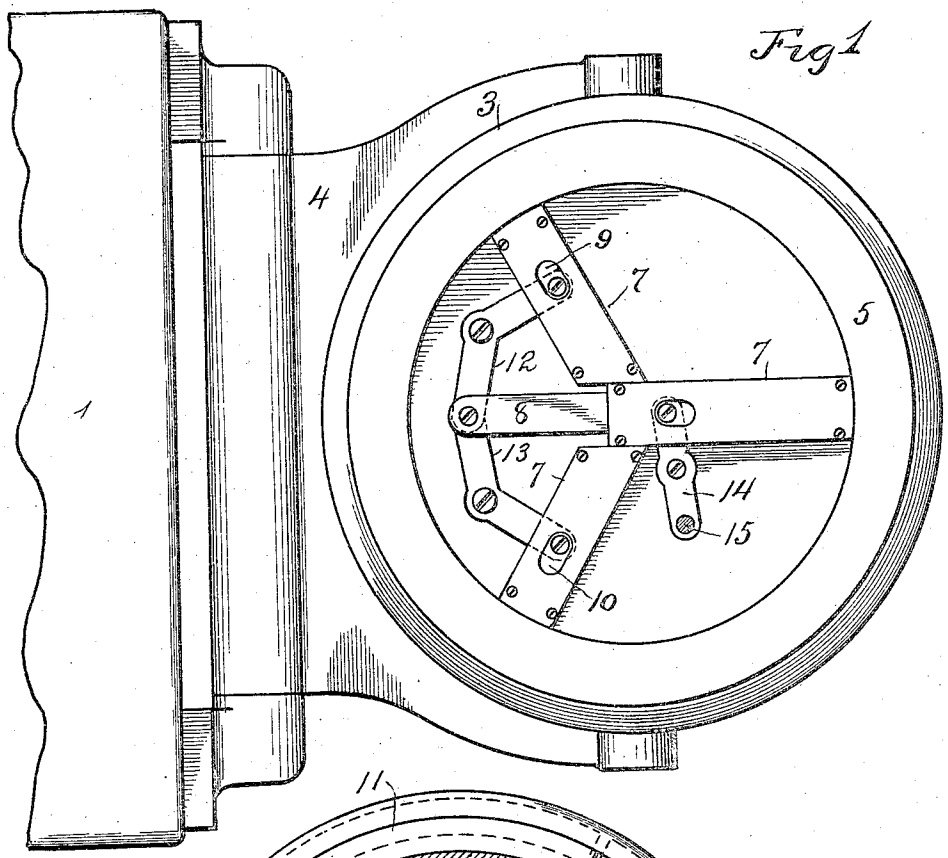
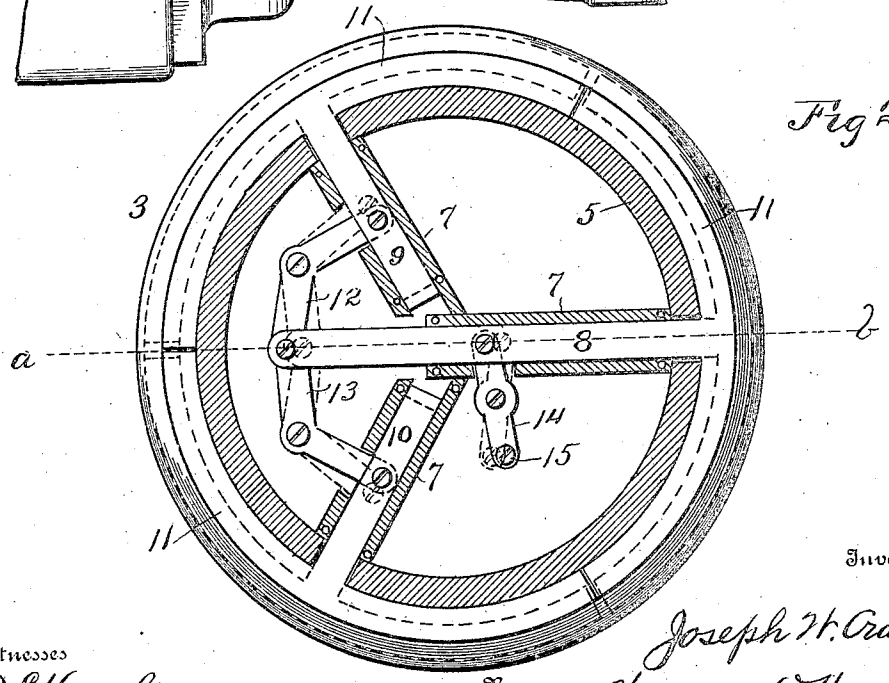


Fig 2.



Witnesses

R. E. Hamilton.

Wm. L. Single.

Inventor

Joseph W. Cramer

By Warren W. Stouse

His Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

No. 845,057. PATENTED FEB. 26, 1907.

J. W. CRAMER.

SAFE.

APPLICATION FILED FEB. 19, 1906.

2 SHEETS—SHEET 2.

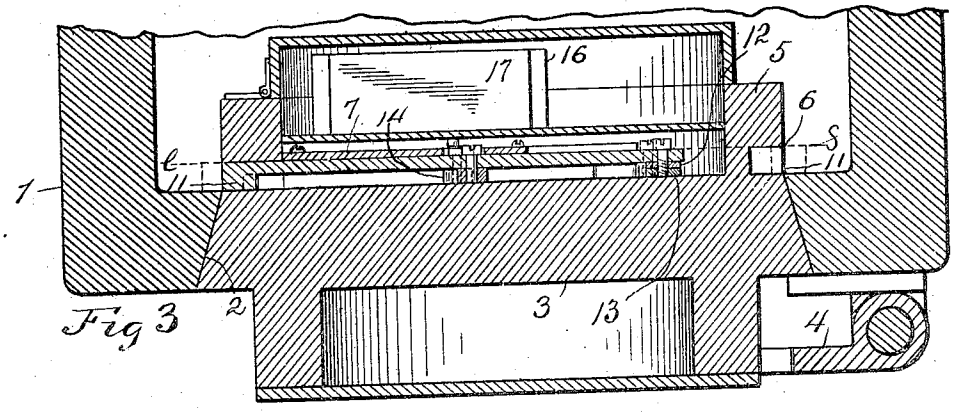


Fig 3

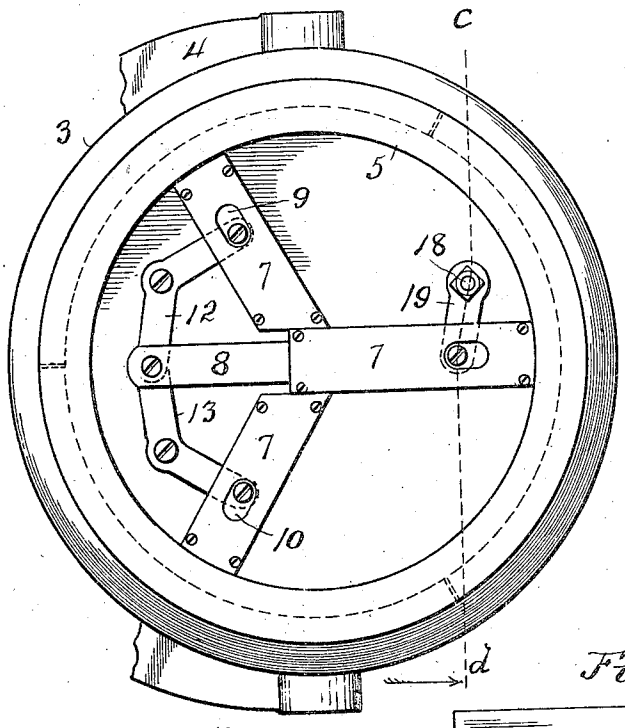


Fig 5

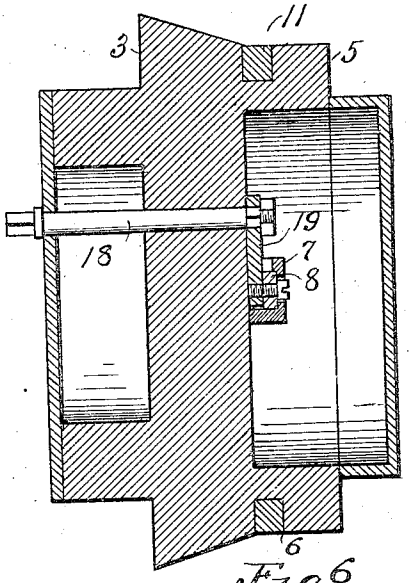


Fig 6

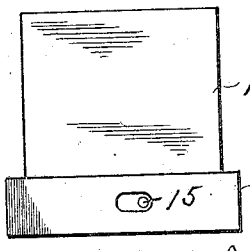


Fig 4

Witnesses

R. E. Hamilton.

Wm. C. Lingle.

Inventor

Joseph W. Cramer

By Warren D. House

His Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH W. CRAMER, OF KANSAS CITY, KANSAS.

SAFE.

No. 845,057. Specification of Letters Patent. Patented Feb. 26, 1907.

Application filed February 19, 1906. Serial No. 301,902.

To all whom it may concern:

Be it known that I, JOSEPH W. CRAMER, a citizen of the United States, residing in Kansas City, in the county of Wyandotte and the State of Kansas, have invented new and useful Improvements in Safes, of which the following is a specification.

My invention relates to improvements in safes. It relates particularly to the locking mechanism connected with the door.

The object of my invention is to provide a safe-door-locking mechanism which is easily operated, has great strength, is durable, and located so that access to the bolts cannot be had from outside when the door is closed.

The novel features of my invention are hereinafter fully described and claimed.

Figure 1 is a view showing a portion of a safe in side elevation, the door being shown swung to the open position so that the rear side is presented to view, the motor and time-actuated mechanism controlling the motor being removed. Fig. 2 is a vertical cross-section taken in a plane corresponding to the dotted line *e f* on Fig. 3. In this view the bolts are shown in solid lines in the retracted position and in dotted lines in the extended position. Fig. 3 is a horizontal sectional view taken on a plane corresponding to the dotted line *a b* of Fig. 2. In this view a portion of the safe, the door, and the two casings containing the motor and the time-actuated mechanism are shown, the door being shown in the closed position and the bolts shown in solid lines in retracted positions, the extended position of the bolts being represented in dotted lines. Fig. 4 is a rear elevation view of the casings containing the time-actuated mechanism and the motor for retracting the bolts. Fig. 5 is a rear elevation view of a modified form of my invention in which the bolts are retracted and extended by means of a rock-bar extending through the door to the forward side thereof. Fig. 6 is a vertical sectional view taken on the dotted line *c d* of Fig. 5.

Similar characters of reference denote similar parts.

1 denotes the body of the safe, having a circular opening with a bevel-seat 2, to which is fitted the beveled body of the safe-door 3, pivotally mounted at its upper and lower ends between the two arms of a vertical bracket 4, which is hinged to the safe-body. Upon the inner or rear side of the door 3 and preferably integral therewith is a concentric cylindrical flange 5, provided adjacent the bevel portion of the door with an annular peripheral groove 6. Upon the rear side of the door 3 are mounted a plurality of radial U-shaped guides 7, in which are radially slidable a plurality of bolts 8, 9, and 10, respectively. The bolts 8, 9, and 10 extend through radial slots in the flange 5 and into the annular groove 6. Each of said bolts is provided at its outer end with an arcuate head 11, fitted in the annular groove 6, and when the bolts are retracted, as shown in Figs. 2 and 3, forming a circular divided ring.

The radial throw or movement of the bolts 8, 9, and 10 is such that when the bolts are extended the heads 11 lie partly within the groove 6 and overlap the inner side of the body of the safe, as shown in dotted lines in Figs. 2 and 3. When the bolts are retracted, the heads 11 lie wholly within the groove 6, as permitting the door to be opened. Pivoted to the rear side of the door between the bolts 8 and 9 and between the bolts 8 and 10 are two levers 12 and 13, the opposite ends of the lever 12 being pivoted to the adjacent bolts 8 and 9, and the opposite ends of the lever 13 are pivoted, respectively, to the adjacent bolts 8 and 10. The said levers 12 and 13 are so positioned that when the bolt 8 is radially moved the said levers will be swung so as to similarly move the bolts 9 and 10—that is, when the bolt 8 is outwardly moved the levers 12 and 13 will be swung so as to move outwardly the bolts 9 and 10.

When it is desired to have the bolts retracted by a time-controlled motor, the following mechanism is provided: Pivoted to the rear side of the door is a lever 14, one end of which extends through the guide 7 and is pivoted to the bolt 8. The other end of the lever has mounted thereon a rearwardly-extending stud 15, reciprocated by a motor of any suitable construction contained in a casing 16, suitably supported upon the rear side of the door 3 and controlled in its operation by a time-lock mechanism of any suitable construction and contained in a casing 17, also supported upon the rear side of the door. I do not confine myself to any particular style of motor or time-lock mechanism, as any of the ordinary kinds commonly used will answer. The function of the motor is to move the stud 15 at the time the time-actuated mechanism permits and force the said stud and lever 14 from the position shown in solid lines to that shown in dotted lines in

Fig. 2. When the lever 14 is so swung, the bolts 8, 9, and 10 are retracted.

In Figs. 5 and 6 I have shown a form of my invention in which the bolts may be operated from the outside. In this form of my invention a rock-shaft 18 extends through the door 3, the forward end of the shaft being squared to permit of being gripped with a crank-wrench, (not shown,) by means of which the shaft is rocked. To the rear end of the shaft 18 is rigidly secured one end of a crank-arm 19, the other end of which extends through the adjacent guide 7 and is pivotally connected to the bolt 8. By rocking the shaft 18 to and fro the bolt 8 is radially moved, thus radially moving the bolts 9 and 10 by means of the levers 12 and 13.

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

1. The combination with a safe-door of circular shape having an annular peripheral groove, of two bolts radially movable on the door and extending into said groove, each bolt having at its outer end an arcuate head fitted in said groove, a lever pivoted to the door and pivotally connected at opposite ends to said bolts, the disposition of said lever relative to said bolts being such that when one bolt is radially moved outwardly the other bolt will be moved in a like direction, and means for moving one of said bolts radially.

2. The combination with a safe-door of circular shape having an annular peripheral groove, of two bolts radially movable on the door and extending into said groove, each bolt having at its outer end an arcuate head fitted in said groove, a lever pivoted to the door and pivoted at opposite ends to said bolts, the disposition of the levers to said bolts being such that when one bolt is radially moved outwardly the other bolt will be moved in a like direction, another lever pivotally mounted on the door, means by which when the second lever is swung one of the bolts will be radially moved, and means for swinging said second lever.

3. The combination with a safe-door of circular shape having an annular peripheral groove, of a plurality of bolts radially movable on the door and extending into said groove, each bolt having at its outer end an arcuate head fitted in said groove, a plurality of levers pivotally mounted on the door, each lever having its opposite ends pivoted to two adjacent bolts, the disposition of said levers being such that when one bolt is radially moved the levers will be swung and the other bolts radially moved thereby, and means for radially moving one of said bolts.

4. The combination with a circular safe-door having an annular peripheral groove, of a plurality of bolts radially movable on the door and extending into said groove, each bolt having at its outer end an arcuate head fitted in said groove, a plurality of levers pivotally mounted on the door, each lever having its opposite ends pivoted to two adjacent bolts, the disposition of said levers being such that when one bolt is radially moved the levers will be swung and the other bolts radially moved thereby, another lever pivotally mounted on the door, means for radially moving one of said bolts when the latter-named lever is swung, and means for swinging said latter-named lever.

5. The combination with a circular safe-door having an annular peripheral groove, of a plurality of bolts radially movable on the door and extending into said groove, a plurality of levers pivotally mounted on the door, each lever having opposite ends pivoted to adjacent bolts, the disposition of said levers being such that when one bolt is radially moved the other bolts will also be radially moved, a motor, a time-actuated mechanism controlling said motor, and means for radially moving one of said bolts when the motor is operated.

6. The combination with a circular safe-door having an annular peripheral groove, of a plurality of bolts radially movable on said door and extending into said groove, each bolt having at its outer end an arcuate head fitted in said groove, a plurality of levers pivotally mounted on said door, each lever having opposite ends pivoted to two adjacent bolts, the disposition of the levers being such that when one bolt is radially moved the other bolts will be similarly moved, another lever pivoted on the door, means by which when the latter-named lever is swung one of said bolts will be radially moved, a motor provided with means when operated for swinging the latter-named lever, and a time-actuated mechanism controlling the operation of said motor.

7. The combination with the safe-body having a circular opening with a bevel-seat, of a circular safe-door having a bevel portion fitted to said seat and having a cylindrical flange projecting into the body beyond the seat when the door is closed, said flange having an annular peripheral groove, a plurality of bolts radially movable on said door and extending through said flange into said groove, each bolt having at its outer end an arcuate head fitted in said groove, said heads lying wholly within the groove when the bolts are retracted, and when the bolts are extended lying partly within said groove and overlapping the inner side of the body of the safe, a plurality of levers pivoted to the door and pivoted each at opposite ends to two adjacent bolts, the levers being positioned so that when one bolt is radially moved all the other bolts will be radially moved, and means for moving one of said bolts radially.

8. The combination with the safe-body

having a circular opening having a bevel-seat, of a circular door fitted to said seat and having a cylindrical flange extending inwardly beyond the inner side of the body when the door is closed, said flange having an annular peripheral groove, a plurality of bolts radially movable on the door and extending through said flange into said groove, each bolt having at its outer end an arcuate head fitted in said groove, all of said heads lying wholly within the groove when the bolts are retracted, and lying partly within the groove and overlapping the inner side of the body when the bolts are extended, a plurality of levers pivoted to the door, each lever at opposite ends to two adjacent bolts, the levers being positioned so that when one bolt is radially moved all the other bolts will be similarly moved, another lever pivoted to the door, means by which when the latter-named lever is swung one of the bolts will be radially moved, and means by which said latter-named lever may be swung.

9. The combination with the safe-body having a circular opening having a bevel-seat, of a circular door fitted to said seat and having a cylindrical flange extending inwardly beyond the inner side of the body when the door is closed, said flange having a peripheral annular groove, a plurality of bolts radially movable on said door and extending through said flange into said groove, each bolt having at its outer end an arcuate head fitted in said groove, said heads, when the bolts are retracted, lying wholly in said groove, and when the bolts are extended, lying partly in said groove and overlapping the inner side of the body, a plurality of levers pivoted to the door and pivoted each at opposite ends to two adjacent bolts, the levers being positioned so that when one bolt is radially moved all the other bolts will be similarly moved, a motor, means by which when the motor is operated one of said bolts will be radially moved, and time-actuated mechanism for controlling the operation of the motor.

10. The combination with the safe-body having a circular opening having a bevel-seat, of a circular door fitted to said seat and having a cylindrical flange, which, when the door is closed, projects inwardly beyond the inner side of the body, said flange having an annular peripheral groove, a plurality of bolts radially movable on the door and extending through said flange into said groove, each bolt having at its outer end an arcuate head fitted in said groove, said heads, when the bolts are retracted lying wholly within the groove, and when the bolts are extended lying partly in the groove and overlapping the inner side of the body, a plurality of levers pivoted each to the door and pivoted each at opposite ends to two adjacent bolts, another lever pivoted on the door and provided with means when swung for radially moving one of said bolts, a motor, means by which when the motor is operated the latter-named lever is swung, and time-controlled mechanism for controlling the operation of the motor.

In testimony whereof I affix my signature in presence of two subscribing witnesses.

JOSEPH W. CRAMER.

Witnesses:
WARREN D. HOUSE,
HENRY F. ROSE.