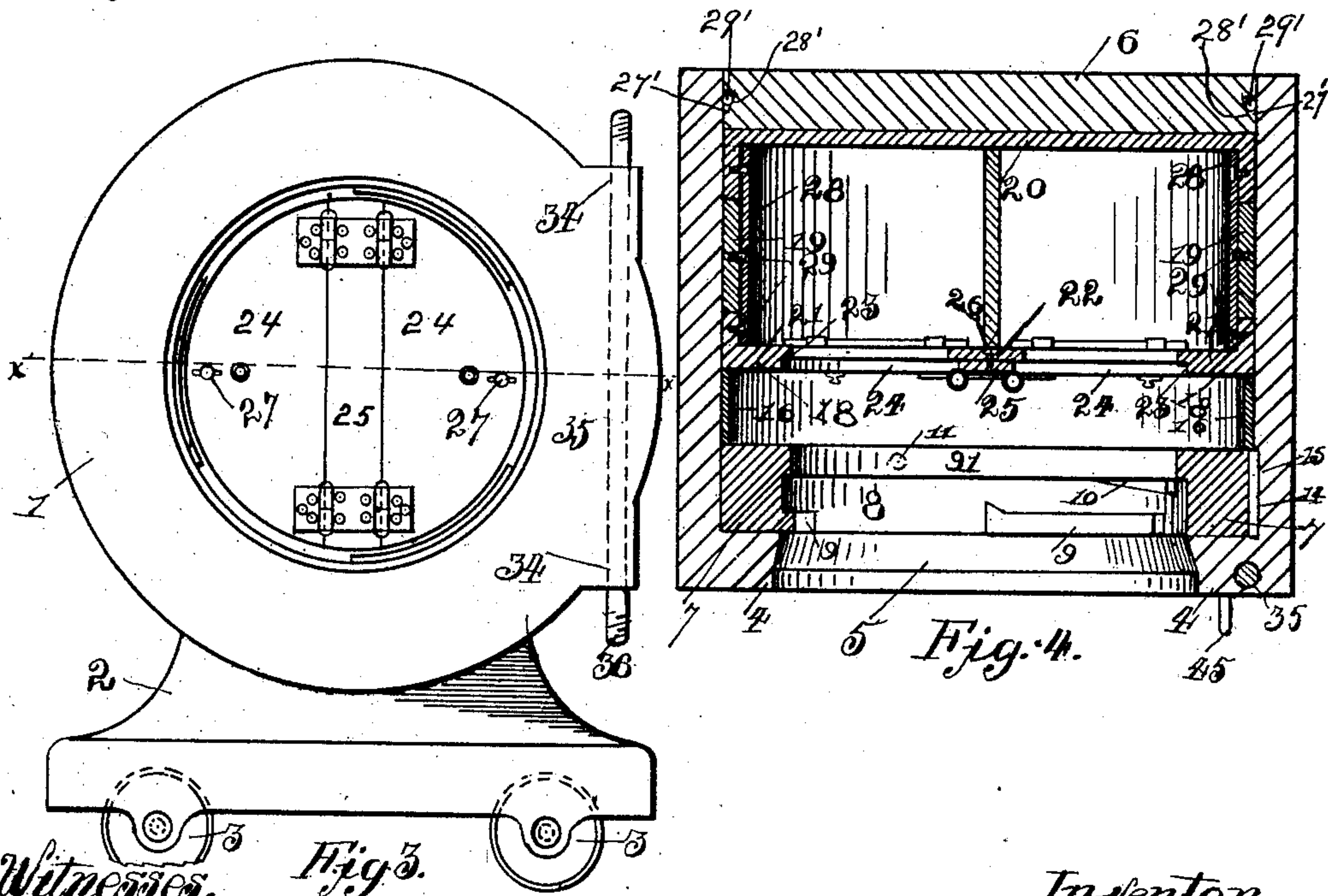
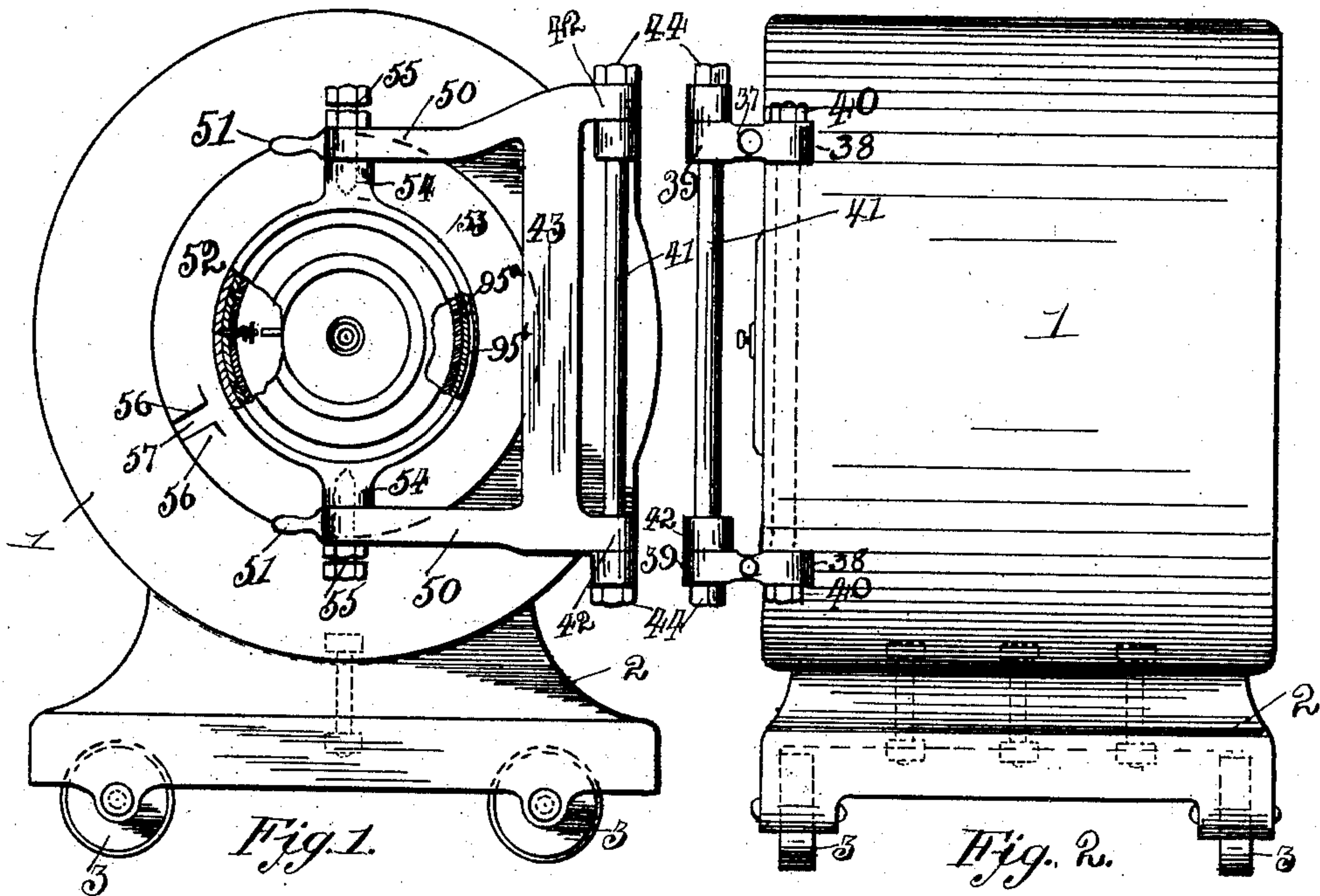


No. 837,825.

PATENTED DEC. 4, 1906.

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SAFE OR VAULT.

APPLICATION FILED MAY 16, 1906.



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## SAFE OR VAULT.

No. 837,825.

Specification of Letters Patent.

Patented Dec. 4, 1906.

Application filed May 16, 1905. Serial No. 260,666.

*To all whom it may concern:*

Be it known that I, JOHN B. HAIN, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Safes or Vaults, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has relation to safes or vaults; and the invention relates more particularly to that class known as "burglar-proof" safes or vaults; and the primary object of the invention is to provide a burglar-proof structure comprising a body and a door.

The invention aims to utilize the very best materials for the different parts of the safe, yet without arbitrary adherence to any particular kind of material.

It has been the practice in safes and vaults to use a plurality of screws and bolt-holes for securing the numerous outer parts of a safe or vault to the door, these screws and bolt-holes facilitating means for securing a drill or clamp to the safe body or door so often used by experts when burglarizing a safe or vault. To obviate this objection to safes ordinarily constructed, I have devised a safe consisting of a cylindrical body portion having a circular revolving door, the body portion being devoid of all screws and bolt-holes, and in said body portion I provide a separate complete cylindrical reserve-chest that forms independent compartments within the safe or vault, said chest or compartment being firmly anchored within the safe by positive and reliable means that will be hereinafter described.

Throughout the construction of my improved safe-body I employ unworkable or non-workable metals having inserts of millable metal to facilitate the assembling of the various parts of my improved safe.

The construction entering into my improved safes and vaults will be hereinafter more fully described and then specifically pointed out in the claims, and, referring to the drawing accompanying this application, like numerals of reference designate corresponding parts throughout the several views, in which—

Figure 1 is a front elevation of my improved safe mounted on a carriage. Fig. 2 is a side elevation of the same. Fig. 3 is a front elevation of the safe, the door thereof being removed and showing the inside or

chest doors closed. Fig. 4 is a horizontal section of my improved safe, taken on the line *xx* of Fig. 3. Fig. 5 is a detail view of a handle or lever employed for revolving the door of my improved safe.

By observing the drawings accompanying this application it will be seen that I have constructed a safe that can be readily termed a "cylindrical compound burglar-proof safe," one of the main features of which resides in the construction of the chest or inner compartment. The chest, which will be hereinafter described in detail, is preferably made of laminated chrome-steel cylindrical sections with flanged edges for the back and front and tubular filling-plates, which are attached to the cylindrical sections and the whole chest then telescoped into the safe by hydraulic pressure. The construction of the chest permits of a plurality of whole-plate partitions being used in connection with the safe to provide shelves and apartments, and these partitions can be positioned within the inner tubular plate before the rear wall of the chest is forced into position.

In describing the invention in detail reference will be had to Figs. 1 to 4, inclusive, wherein the preferred embodiments of my invention are illustrated. The safe proper consists of a cylindrical body 1, which is carried by and mounted on a base or carriage 2, mounted upon suitable wheels 3. My invention resides particularly in the construction of the cylindrical body 1 and its appurtenant parts. The front of the cylindrical body or shell 1 is formed with an inwardly-extending annular flange 4 to provide a circular doorway 5. The rear of the body 1 is left open until the different parts of the safe have been assembled and properly positioned, at which time the back plate 6 can be placed within the body of the safe. In assembling the different parts of the safe I employ a member or door-locking ring 7, having a circular opening 8 formed therein, which is provided with a plurality of substantially segment-shaped locking members or lugs 9, some of which are provided with beveled surfaces 10. I preferably only employ two or three locking members, and where three locking members are employed it will of course be understood that the safe-door need only be revolved one-sixth of a revolution in order to open or close the same, and by employing only three locking members a better distribution of the locking-surface is pro-



vided. The locking-ring 7 is also provided with a plurality of openings 11, designed to receive the locking-bolts of the door. When the locking-ring has been placed within the forward end or front side of the safe, keyways 14 are provided in which is inserted a key 15 to prevent the locking-ring from rotating. A cylindrical shell 16 of a suitable width is then placed within the body of the safe to create a sufficient space for the swinging of doors carried by a chest, to be presently described. The chest in its entirety is preferably formed of three cylindrical sections, (designated 18, 19, and 20.) The cylindrical section 18 is formed with an inwardly-extending annular flange 21, forming a circular opening having a vertically-disposed rib 22, which divides the circular opening into two substantially semicircular doorways. The circular edges of the doorways are chamfered, as indicated at 23 23, to provide stepped doorways in which similar doors are to be mounted. The advantage gained by substantially semicircular doorways is that the chamfered surfaces of the doorway can be ground to a metallic fit before the doors are hinged to the straight edges of the plate 25. After the doorways have been properly ground doors 24 24 are hinged to the plate 25, which is secured to the vertically-disposed rib 22 by suitable screws 26, that are placed in engagement with the plate 25 from the inner side of the rib 22. I do not care to confine myself to the form of hinge used, as a crane or transverse hinge may be readily employed, and when the doors have been properly hung they will swing outwardly, one to the right and one to the left. In connection with these doors a conventional form of lock and bolts may be used, as designated by the reference-numerals 27 27. I employ an annular sleeve 28, to which the sections of the chest are adapted to be attached. Upon the sleeve is adapted to be placed the cylindrical section 19 and the cylindrical sections 18 and 20, which form an annular chest or compartment having two doors. To retain the cylindrical sections 18, 19, and 20 upon the sleeve 28, suitable screws 29 are employed, which pass through the sleeve 28 and engage said sections; as clearly illustrated in Fig. 4 of the drawings. After the chest has been assembled in its entirety it is forced bodily within the safe-body, and usudurian or other filling may be employed to seal the chest within the safe-body and prevent wedges being driven in between the periphery of the chest and the walls of the safe-body. The back plate 6 of the safe can then be placed in position, and this plate is preferably made to snugly fit the cylindrical opening of the safe-body, and hydraulic means is preferably employed for forcing the back plate within the body of the safe. In place

of using the back plate constructed of a separate piece I may use the back plate of the chest by heavily reinforcing the same and utilize it for the rear plate of the safe-body. In case the back plate formed of a separate piece is used I have devised novel means for locking said wall within the body of the safe as an extra precaution, said means being illustrated in Fig. 4 of the drawings. The periphery of the back plate 6 is provided with a plurality of grooves 27', in this instance the grooves being four in number. Each groove is provided with a beveled surface 28' and with friction-rollers 29', which are adapted to seat within the grooves and prevent the back plate from being removed from within the safe-body. The friction-rollers 29' are adapted to impinge between the surfaces of the body of the safe and the beveled surfaces of the grooves and serve as a wedge to prevent the back plate from being removed from the safe.

From the foregoing it will be observed that prior to placing the chest and the back plate within the safe-body a through-passage was established upon similar lines. The through-passage is of assistance to the workmen in assembling the different parts of the safe, particularly the door and locking mechanism, the fitting of which is essential in safe construction. It is a well-known fact that in the manufacture of safes, and particularly vaults, it is necessary to thoroughly test the locking features of the doors, and in order to do this it necessitates the presence of a workman within a vault or large safe in order that should the locking mechanism fail to work after the doors have been locked the workmen can then release the locking mechanism. Unless a workman remains within the safe while the lock is being tested it has been impossible to obtain a perfect fitting of the door and bolts so that each internal member does its part, and in view of this and many other disadvantages which are experienced by safe constructors I have adopted in the construction of my improved safe the through-passage of the safe-body. Prior to placing the chest and its appurtenant parts, together with the back plate, within the safe-body I mount my improved door and its locking mechanism upon the safe-body and ascertain whether the safe-door fits snugly and the locking mechanism operates properly before adjusting the chest and the back plate. It is obvious that observations as to the general working and the fitting of the door of my improved safe can be made from the rear of the safe by one workman and correctly positioned and manipulated by another workman in front of the safe, thus insuring a perfect and reliable closure for a safe.

The safe constructed as hereinbefore described is provided with a main door.



(Shown in Figs. 1 and 2 of the drawings.)

To support the door, the body of the safe is provided with lugs 34, and the safe-body is provided with a vertically-disposed aperture which passes through said lugs, and in this aperture is secured a screw-threaded rod 36, upon the ends of which are mounted hinge members 37. These members carry sleeves 38 and 39, the sleeves 38 being adapted to fit over the screw-threaded ends of the rod 36 and be retained thereon by nuts 40. In the sleeves 39 39 is mounted a rod 41, and upon this rod are mounted pierced lugs 42 42 of a crane member 43. The lugs 42 42 are adapted to rest upon the sleeves 39 39, and nuts 44 44 are employed to retain the lugs 42 42 in engagement with the sleeves 39 39, also to retain the rod 41 within said sleeves. The crane member carries outwardly-extending arms 50 50, which are provided with suitable handles 51 51, whereby the crane member 43 can be conveniently swung outwardly from the safe. Between the arms 50 50 of the crane member is pivotally mounted the circular main door 52. The front of the door is provided with a circular band or ring 53, carrying diametrically-opposed lugs 54 54, which are held in engagement with the arms 50 50 of the crane member by means of pintles 55 55. The front of the door is provided with protuberances 56 56, forming recess 57, adapted to receive the end 58 of the lever for rotating the circular door, said lever being shown in detail view, Fig. 5.

In Fig. 1 of the drawings the door is shown as partly broken away in order to show the stop-pins 95<sup>a</sup>, which is carried by a revoluble band and is adapted to move in a groove 95<sup>b</sup>, formed in the ring 53 and which constitutes a portion of the day locking mechanism of the safe; but as this mechanism and, in fact, the whole construction of the door and the mechanism for hinging the same to the safe constitute no part of my present invention the same need not be particularly described.

In constructing my improved safe I preferably employ manganese-steel for the body portion; but as this steel is somewhat brittle I preferably form the chest of tempered laminated chrome-steel, which forms an inside

lining for the safe-body and adds to the strength of the same.

What I claim, and desire to secure by Letters Patent, is—

1. The combination of a cylindrical safe-body and a separate cylindrical back plate inserted within the safe-body, with means interposed between the periphery of the back plate and the inner surface of the body for securing the plate in position, and a door hinged to the body and adapted to enter the same.

2. In a safe, the combination with a cylindrical safe-body provided with a doorway and, a circular back plate seated in said safe-body, of means disposed between the periphery of the back plate and the inner surface of the body for securing the plate in position, a chest mounted in said safe-body and bearing against said back plate, means arranged within the safe-body for sustaining the chest in position against the back plate and a door hinged to the body and adapted to enter said doorway.

3. The combination with a cylindrical safe-body having an internal cavity of equal diameter from a point adjacent the front of the safe to the rear thereof, of a circular plate fitting in the rear of said cavity, and means seated in recesses in the periphery of said plate for locking the plate in position.

4. The combination with a cylindrical safe-body having an internal cavity of equal diameter throughout, said body having an inwardly-projecting annular flange at its front, a locking-ring arranged in said body at the rear of said flange, a cylindrical shell arranged in the body at the rear of said locking-ring, a chest arranged in the body at the rear of said cylindrical shell, a back plate arranged in the cavity of the body at its rear end and bearing against said chest and means for locking said plate within the cavity of the body.

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

JOHN B. HAIN.

Witnesses:

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