Feb. 12, 1924. 1,483,474

E. OHNSTRAND

BOLT AND SOCKET CONSTRUCTION

Filed Jan. 28, 1922

FIG. 1

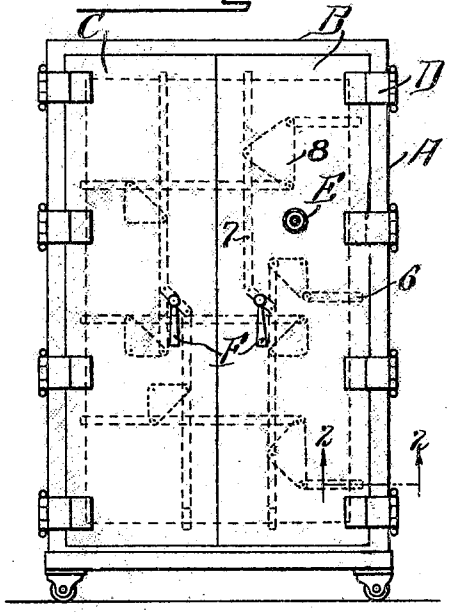


FIG. 3

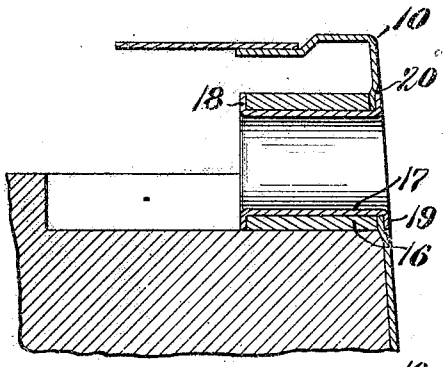


FIG. 4

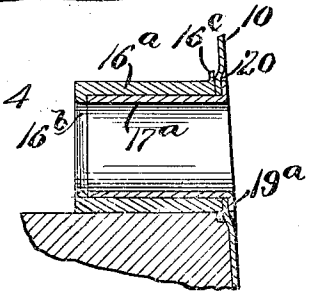
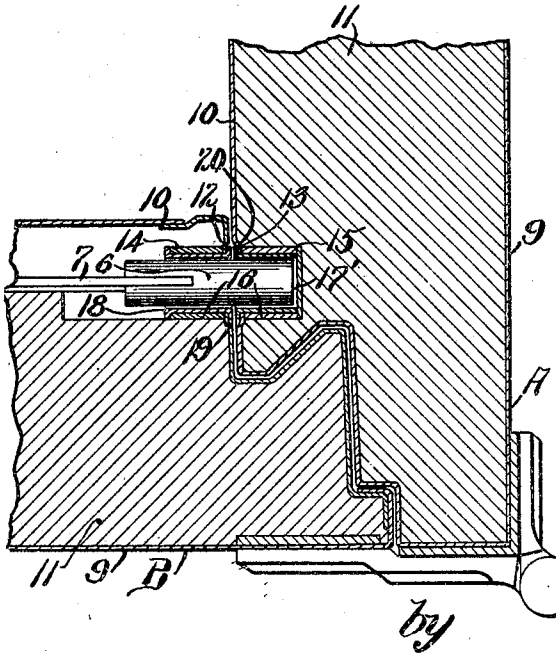


FIG. 2



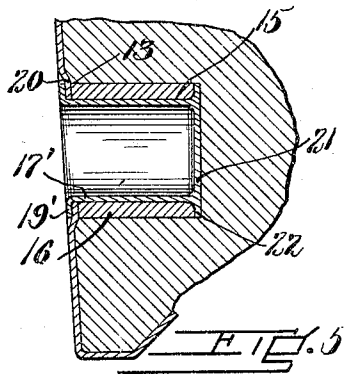


FIG. 5

Inventor;
Enoch Ohnstrand,
by Roberts, Roberts & Cushman
his attys.

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UNITED STATES PATENT OFFICE.

ENOCH OHNSTRAND, OF MOHAWK, NEW YORK, ASSIGNOR TO LIBRARY BUREAU, OF CAMBRIDGE, MASSACHUSETTS, A CORPORATION OF NEW JERSEY.

BOLT AND SOCKET CONSTRUCTION.

Application filed January 28, 1922. Serial No. 532,445.

To all whom it may concern:

Be it known that I, ENOCH OHNSTRAND, a citizen of the United States of America, and resident of Mohawk, in the county of Herkimer and State of New York, have invented new and useful Improvements in Bolt and Socket Construction, of which the following is a specification.

This invention relates to bolt and socket construction of the type used for fastening doors and is particularly adapted for use in fire-resisting cabinets such as vaults, safes, filing cabinets, etc., which have a metal lining or facing, usually sheet metal.

The usual construction of fire-resistant receptacles provides slidable locking bolts on the door operating through openings in the metal facing of the door and into similar openings in the metal facing of the door casing. These openings are frequently not reinforced but are merely holes in the metal facing and as such are subjected to pulling or drawing of the metal when the door is under strain from heat, thereby setting up play between the door and the door casing and permitting the door to open more or less and expose the contents of the cabinet. Moreover, these openings whether reinforced or not soon become worn through the cutting action of steel on steel and fail to produce a tight fit for the door. In addition these openings often become corroded due to the action of moisture, so that the bolt does not slide easily. Gritty particles of the heat insulating material between the walls of such cabinets can usually fall directly upon the metal surfaces defining the opening and greatly accelerate the wear thereof.

Objects of the invention are to produce a bolt and socket construction which will indefinitely maintain a tight fit for a door, to strengthen the guide or socket openings for the bolts, to eliminate corrosion and wear of the guide openings, to provide for smooth and easy operation of the bolts, and in general to improve devices of this kind.

The invention comprises guide members attached to the door and door casing adjacent to and in alignment with the openings therein for the bolts. Each of these guide members preferably comprises a tubular jacket and a bushing therefor. The jacket is preferably of a hard metal such as steel, and the bushing of a softer metal such as bronze. The outer portions of the bushing are suitably bent or swedged outwardly to form integral flanges inclosing the ends of the jackets. The guide members are made fast to the metal facings of the door and door casing, the preferred way being to utilize one of the integral flanges of the bushings to rivet each member in place. The metal facing adjacent the opening is suitably depressed so that the riveting flange of the bushing will be flush with the plane of the facing. The guide members received in the door casing are in the form of sockets having closed inner ends. The closed end is preferably formed by providing these members with bushings in the form of thimbles.

In order to illustrate the invention one concrete embodiment thereof is shown in the accompanying drawings, in which—

Fig. 1 is a front elevation;

Fig. 2 is a section on greatly enlarged scale on the line 2—2 of Fig. 1;

Fig. 3 is a still further enlarged section of the bolt guide member shown at the left side of Fig. 2;

Fig. 4 is a sectional view of a modified guide member similar to that shown in Fig. 3; and

Fig. 5 is an enlarged section of the bolt guide member shown at the right of Fig. 2.

The invention is shown as incorporated in a safe A of usual form having double doors B and C supported on the safe by hinges D, a lock dial E, and an actuating handle F for operating bolts 6 by means of a series of rods 7 and bell cranks 8 as shown in dotted lines in Fig. 1. The safe has the usual outer casing 9, inner casing or lining 10 and heat insulating material 11 in the space between the inner and outer casings as indicated in Fig. 2.

The details of the particular bolt and socket construction chosen to illustrate the invention are shown in detail in Figs. 2, 3, 4 and 5, and will now be described. Since the bolts and guide members therefor are all similar in form and construction, description of one assembly thereof will be sufficient. Referring now to Fig. 2 wherein a portion of door B and the adjacent portion of safe A comprising the door frame are shown, the inner casing 10 of both door

and door frame are provided with aligned openings 12 and 13 respectively in which are made fast guide members 14 and 15 extending respectively within the door and within the safe wall. These guide members reinforce the openings 12 and 13. Member 14 comprises a jacket 16 of hard metal as steel, provided with a bushing 17 of softer metal such as bronze. The bronze bushing 17 is bent or swedged outwardly at its ends forming flanges 18 and 19. The bushing 17 extends through opening 12 so that flange 19 contacts the outer face of inner casing 10 of the door thereby riveting the guide member 14 securely in place and pressing jacket 16 into intimate contact with the inner face of casing 10. This casing adjacent the opening 12 is inwardly depressed as indicated at 20 so that flange 19 is flush with the plane of the outer surface of casing 10.

In Fig. 4 is shown an alternative structure for the guide member on the door which comprises a steel jacket 16^a having an inwardly projecting flange 16^b which serves as an abutment or stop for the inner end of bushing 17^a, and an outwardly extending flange 16^c providing a greater area of contact with the inner face of casing 10 adjacent its inwardly bent portion 20. This form of guide member is held in place by the outer flange 19^a upon the bushing 17^a but the bushing is held in its jacket 16^a only by friction produced by its tight fit within the jacket and not by an inner flange as shown in Fig. 3.

Bushing 17′ in guide member 15 (Fig. 5) is in the form of a thimble having a closed inner end 21 preferably integral with the bushing 17′ and having a circumferential flange 22 enclosing the inner end of jacket 16 in the manner of flange 18 on bushing 17. Guide member 15 is held in place by a riveting flange 19′ on bushing 17′ received in the depressed portion 20 of casing 10 in the manner previously described. The provision of the closed inner end for guide member 15 prevents the access of gritty particles of the heat insulating filling 11 which would produce wear on the bearing surface of the bushing.

The socket arrangement herein disclosed provides a strong reinforcement for the openings 12 and 13 in the inner casings 10 obviating all drawing of the metal when the doors B and C expand from the heat as in the case of fire. The bronze bushings 17 and 17′ in guide members 14 and 15 which do not corrode insure easy and smooth operation of bolts 6 without appreciable wear for an indefinite period. This absence of wear, due to the provision of the bushings of softer metal than the bolt and to the exclusion of grit from the interior of the casing by reason of the closed inner end 21 of socket member 15 produces a permanently tight fit for the doors of the safe, thus insuring complete protection to the contents in the event of fire.

I claim:

1. In a safe having a sheet metal wall provided with a bolt opening therein, a bolt socket abutting one side of said wall around said opening, and a bushing fitting in said socket, the bushing extending through said opening and overlapping the other side of said wall around the opening.

2. A guide member for application to a safe or the like, comprising a bushing having a flange portion at one end and a jacket member of harder material than the bushing fitting on the bushing and in engagement with the flange thereof, said bushing having a portion at its opposite end projecting beyond the jacket and adapted to be expanded to lock the guide in applied position.

3. In a safe having spaced walls with insulation therebetween, a bolt socket comprising an interfitting sleeve and bushing embedded in said insulation, the sleeve abutting the inner face of one of said walls and the bushing extending through an opening in the wall and overlapping the outer face thereof around the opening.

4. Bolt and socket construction for fastening doors of cabinets and the like having a metal lining comprising a bolt on the door, and aligned guide members for said bolt fast in the lining of the door and door frame respectively, said guide members each comprising a jacket having a bushing, the bushing being headed over to rivet the guide member to the lining.

5. Bolt and socket construction for fastening doors of cabinets and the like having a metal facing on both the door and the door casing, a bolt slidable through aligned openings in both said parts, guide members for said bolt fast in said openings, each guide member having a bushing of relatively soft metal, said bushings being headed over against the metal facing.

6. Bolt and socket construction for fastening doors of cabinets and the like comprising a slidable bolt suitably mounted to pass through aligned openings in the door and the door casing, and guide members for said bolt adjacent said openings, each guide member comprising a jacket of hard metal and a bushing of softer metal, each bushing having outwardly bent flanges enclosing the ends of its jacket.

7. Bolt and socket construction for fastening doors of cabinets and the like having a metal facing on both the door and the door casing, a slidable bolt suitably mounted to pass through aligned openings in both said parts, guide members for said bolt, each member having a bushing headed over to form a flange against the metal facing to

rivet the guide member in place, said metal facing being depressed adjacent the opening therein whereby the riveting flange of each bushing may be flush with the plane of said facing.

8. Bolt and socket construction for fastening doors of cabinets and the like having a metal facing on both the door and the door casing, a slidable bolt suitably mounted to pass through aligned openings in both said parts, and guide means for said bolt fast in said openings, each of said means comprising a bushing within a jacket of harder metal and secured in place by engaging the facing adjacent the opening between a riveting flange on the bushing and the proximate end of the jacket.

9. The combination with a metal wall cabinet casing, of a fastener receiving socket therefor, the casing having a fastener receiving aperture and a depressed portion surrounding the aperture, and the socket comprising a jacket member seated against the depressed portion of the casing and a bushing member within the jacket having a flange at its inner end engaging the jacket and having a portion projecting through the aperture in the casing and headed over into the depression surrounding the aperture to secure the parts in assembled relation.

10. The combination with a metal wall cabinet casing, of a fastener receiving socket therefor, the casing having a fastener receiving aperture and a depressed portion surrounding the aperture and the socket comprising a jacket member seated against the depressed portion of the casing and a bushing member within the jacket having a flange at its inner end engaging the jacket and having a portion projecting through the aperture in the casing and headed over into the depression surrounding the aperture to secure the parts in assembled relation, the bushing having an integral closure at its inner end protecting the socket from matter within the casing.

11. In a safe having a sheet metal wall provided with a bolt opening therein, a bolt socket abutting one side of said wall around said opening, a bushing fitting in said socket, the bushing extending through said opening and overlapping the other side of said wall around the opening and means interlocking said sleeve and bushing against relative axial movement.

12. In a safe having a sheet metal wall provided with a bolt opening therein, a bolt socket having one end abutting one side of said wall around said opening, and a bushing fitting in said socket and overlapping the other end of said socket, the bushing extending through said opening and overlapping the other side of said wall around the opening.

13. In a safe having spaced walls with insulation therebetween, a bolt socket comprising an interfitting sleeve and bushing embedded in said insulation, the sleeve abutting the inner face of one of said walls and the bushing extending through an opening in the wall and overlapping the outer face thereof around the opening, said wall being inwardly offset around said opening so that the overlapping end of the bushing does not project beyond the plane of the wall.

14. In a safe having a sheet metal wall provided with an opening therein, a tubular member extending through said opening and overlapping the other side of the wall around the opening, the wall being offset around the opening so that the overlapping end of the member does not project beyond the plane of the wall.

Signed by me at Mohawk, N. Y., this 24th day of January, 1922.

ENOCH OHNSTRAND.