E. G. BUDD.

METALLIC DOOR.

APPLICATION FILED AUG. 10 1910.

1,020,742.

Patented Mar. 19, 1912.

2 SHEETS—SHEET 1.

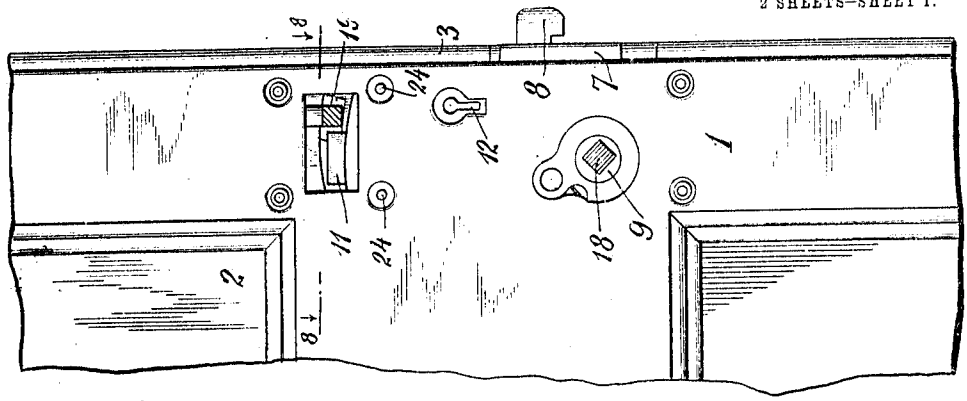

Fig. 3.

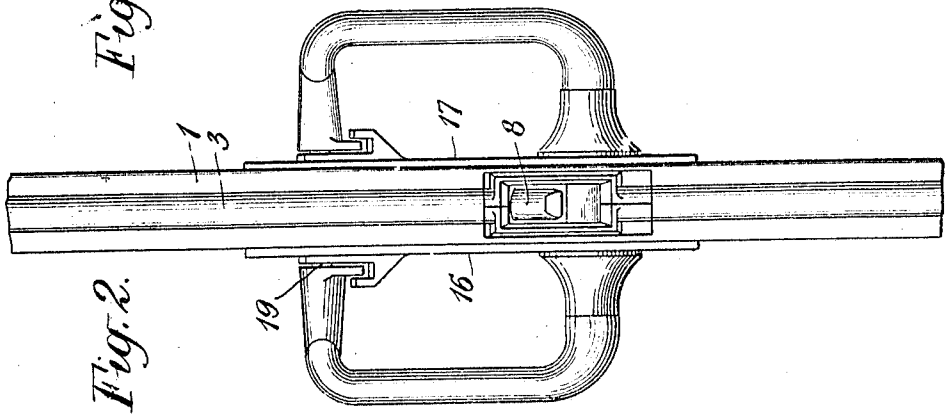

Fig. 2.

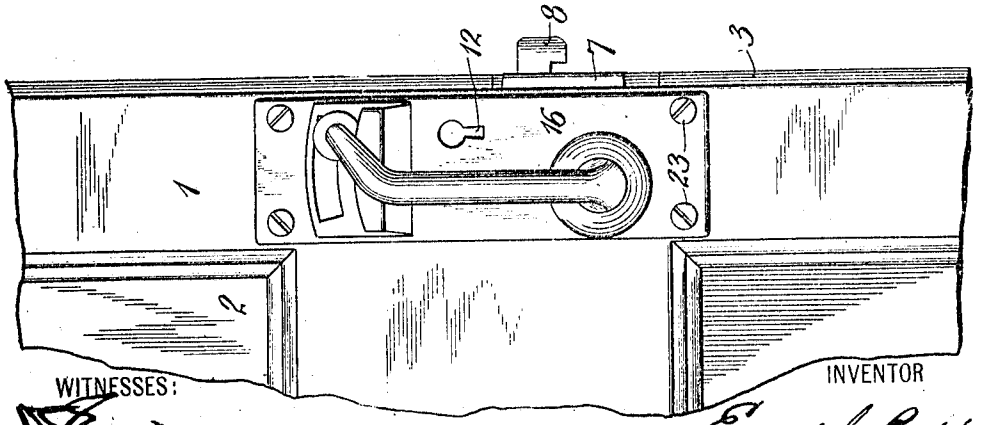

Fig. 1.

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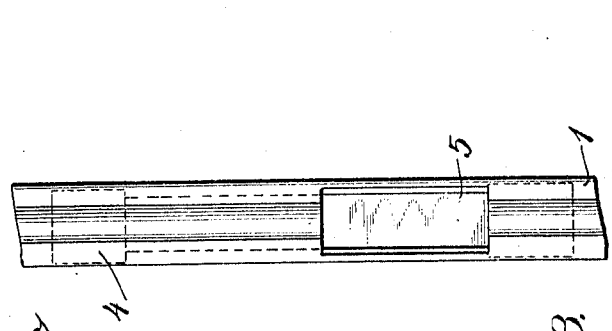

Fig. 7.

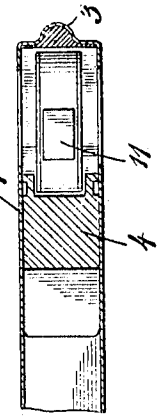

Fig. 8.

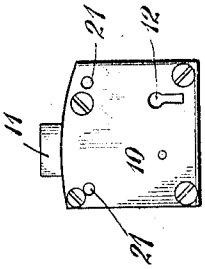

Fig. 5.

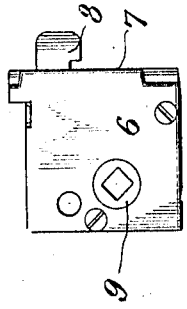

Fig. 6.

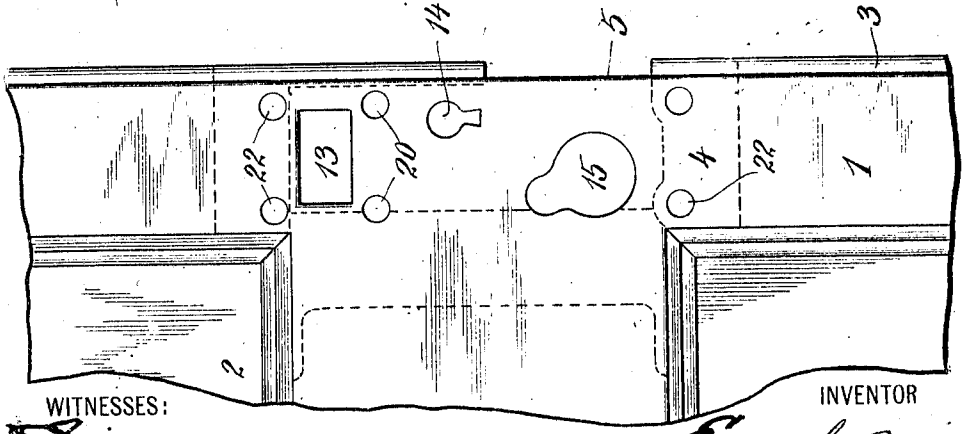

Fig. 4.

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UNITED STATES PATENT OFFICE.

EDWARD G. BUDD, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO HALE AND KILBURN COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF DELAWARE.

METALLIC DOOR.

1,020,742. Specification of Letters Patent. Patented Mar. 19, 1912.

Application filed August 10, 1910. Serial No. 576,537.

To all whom it may concern:

Be it known that I, EDWARD G. BUDD, a citizen of the United States, residing in the city of Philadelphia and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Metallic Doors, of which the following is a specification.

This invention relates to metallic doors constructed largely of sheet-metal and has reference more particularly to the locking devices employed with such doors. The invention is specially applicable to doors having rails formed of strips of sheet-metal bent on lines extending lengthwise thereof to the desired cross-sectional shape, these rails being secured together at their ends to form a frame and panels of sheet-metal being secured thereto within the frame.

The invention concerns the combining of the locking devices with a door of this type and involves the provision of an improved construction whereby great strength and good wearing qualities are secured in a structure which may be manufactured conveniently and at comparatively low cost.

I have illustrated the preferred embodiment of the invention in the accompanying drawings, in which—

Figure 1 is an elevation of a portion of a metallic door; Fig. 2 is a side view of the same; Fig. 3 is a view corresponding to Fig. 1, one side-plate of the locks being removed; Fig. 4 is a view corresponding to Fig. 1, the locks being removed; Figs. 5 and 6 are plan views of the two locks; Fig. 7 is a side view of the structure shown in Fig. 4; and Fig. 8 is a transverse section on line 8—8 of Fig. 3.

Referring to these drawings, the door shown is of the type made of sheet-metal parts, these including rails 1 secured together at their ends to form a frame, and panels 2 secured to these rails within the openings of the frame. Each of the rails 1 preferably consists of a single strip of sheet-metal bent along lines extending lengthwise thereof to the desired cross-sectional configuration. Preferably these rails are of rectangular cross-section, and each is provided with a flange projecting from the inner edge thereof to provide means for securing the panel to the rail. The rail for the outer edge of the door may have its outer edge provided with a lengthwise projection or bead 3. In order to provide means for securing the locking devices to the door and distributing the strains thrown thereon to the parts of the door, a metallic frame 4 is inserted within the door, preferably in the manner indicated by the dotted lines in Fig. 4, during the process of constructing the door. Preferably the strip for the rail 1 is partially formed, the casting 4 is then inserted therein, and the formation of the rail 1 is then completed; thereafter the casting 4 may, if desired, be secured to the rail 1 by welding these parts together.

In the edge of the rail 1, an opening is cut of a size corresponding to that of the front-plate of the lock. This opening is shown at 5 in Figs. 4 and 7. The portion of the locking devices which fits within the rail of the door is made in two parts, these parts being shown in Figs. 5 and 6. These two parts may be considered as two distinct locks and may be termed for convenience the latch-lock and the key-lock. The part 6, shown in Fig. 6, is provided with a front-plate 7 of the same size as the opening 5 in the edge of the rail 1, so that the front-plate will fit snugly in this opening. The portion of the part 6 in rear of this front-plate is of the same height or of less height than the front-plate 7, so that this part may be readily inserted within the door through the opening 5.

Projecting within the part 6 is a spring-actuated locking member or latch 8, this member being adapted to be actuated against the tension of its spring by a rotatable member 9 adapted to be actuated by the handle of the door. The part 10 is also constructed of such a size that it may be inserted within the door through the opening 5. This part 10 is provided with a key-actuated locking member 11 moved back and forth by means of a key inserted in the keyhole 12. The sides of the rail 1 are provided with such openings as may be required for the securing devices employed in securing the parts

of the locks in position, and for those members which must coact with the parts of the locks from the exterior of the door, but none of these openings is of such size as would materially weaken the door structure. Thus, an opening is provided, as shown at 13 in Fig. 4, for the member which is to coact with the locking member 11, and an opening 14 is provided for the insertion of the key. Also an opening 15 is provided for the part on the handle of the door which is to turn the member 9 so as to actuate the locking member 8.

In assembling the parts upon a door, the key-lock 10 is first inserted through the opening 5 and then moved upwardly within the frame or casting 4 to approximately its proper position. The latch-lock 6 is then inserted through the opening 5 and moved backwardly therein until the front-plate 7 of this part fits within the opening 5, its outer surface being flush with the edge of the door. Two side-plates 16 and 17 are then positioned, one on either side of the rail 1, these being of the construction commonly employed in locks of this character, such as are used on the doors of railway cars. The handle on one of the side-plates is provided with a lock-operating rod 18, square in cross-section, which passes through the openings 15 in the sides of the rail 1 and the opening in the operating member 9, its opposite end entering a squared opening in the handle on the other side-plate. Thus by turning either of the handles on the side-plates, the member 9 may be turned and the outwardly projecting end of the locking member 8 raised so as to permit of opening the door. The upper movable ends of the handles on the side-plates have a rod 19 connecting them and extending through the opening 13, this rod being adapted to move in the path of the locking member 11 when that member is retracted.

In order to support the locks 6 and 10 rigidly in their positions, projecting pins may be provided on the side-plates 16 and 17 entering openings in the locks, or openings may be provided for screws used for this purpose. In the present instance, I have shown openings 20 adapted to receive pins 24 projecting inwardly from one of the side-plates and entering openings 21 in the key-lock 10. Also, openings 22 are provided in the sides of the rail 1, to receive screws 23, the inner ends of which coact with the opposite side-plate so as to draw the two side-plates together tightly upon the sides of the rail 1, and these screws 23 may, if desired, be arranged to hold the two locks in place.

It will be seen that in the construction illustrated the rail of the door is not weakened by the provision therein of openings of large size, permitting the insertion of locking-devices combined in a single structure. Instead, locking-devices are employed consisting of two separate locks, a key-lock and a latch-lock, which may be inserted in the rail of the door, one independently of the other, and which, when within the rail, are held in proper relative positions so that they will coact in the desired manner. To position the locks within the rail of the door, it is only necessary that there be provided in the edge of the door an opening of sufficient size to permit the insertion of the two locks edgewise therethrough successively. After the key-lock has been moved through the opening, it is moved in the direction of the length of the rail and away from the opening and the latch-lock is then inserted. When the latch-lock is in position its front plate closes the opening in the edge of the rail. The two locks are held in proper relative positions by projections on the side plates lying on opposite sides of the rail. The use of a frame for the locks, such as that shown at 4, is not necessary, but its use is preferred; when such frame is used, it is of such shape that it will not interfere with the free movement of the key-lock 10 in the direction of the length of the rail when the projections on the side plates have been withdrawn from the openings in the key-lock.

Having now described my invention, what I claim as new therein and desire to secure by Letters Patent is as follows:—

1. The combination of a door which is hollow adjacent to one edge thereof and which has an opening in said edge, a lock-part movable through said opening and movable within the door away from said opening, a second lock-part movable through said opening and means for holding said lock parts in position within the door with said second lock-part closing the said opening through the edge of the door, substantially as set forth.

2. The combination of a door consisting of hollow sheet-metal rails and panels secured thereto, one of said rails having an opening in the edge thereof, a key-lock movable through said opening and movable within the rail in the direction of the length of the rail and away from said opening, a latch-lock movable through said opening and means for securing said locks in position within the rail with said latch-lock closing the said opening in the edge of the rail, substantially as set forth.

3. The combination of a door having a hollow sheet-metal rail at one edge thereof and an opening in the edge of the rail, a frame secured within the rail adjacent to said opening, a lock movable through said opening and movable within the rail and frame in the direction of the length of the rail and away from said opening, a second

lock movable through said opening and means for securing said locks in position within said frame with said second lock closing the opening in the edge of the door, said first lock, when released by said securing means, being capable of movement into contact with the second lock, substantially as set forth.

This specification signed and witnessed this 23rd day of July, 1910.

EDWARD G. BUDD.

Witnesses:
W. M. SWOPE,
HAROLD M. THOMAS.