

(No Model.)

M. MOSLER.  
SAFE DOOR.

No. 472,584.

Patented Apr. 12, 1892.

Fig. 1.

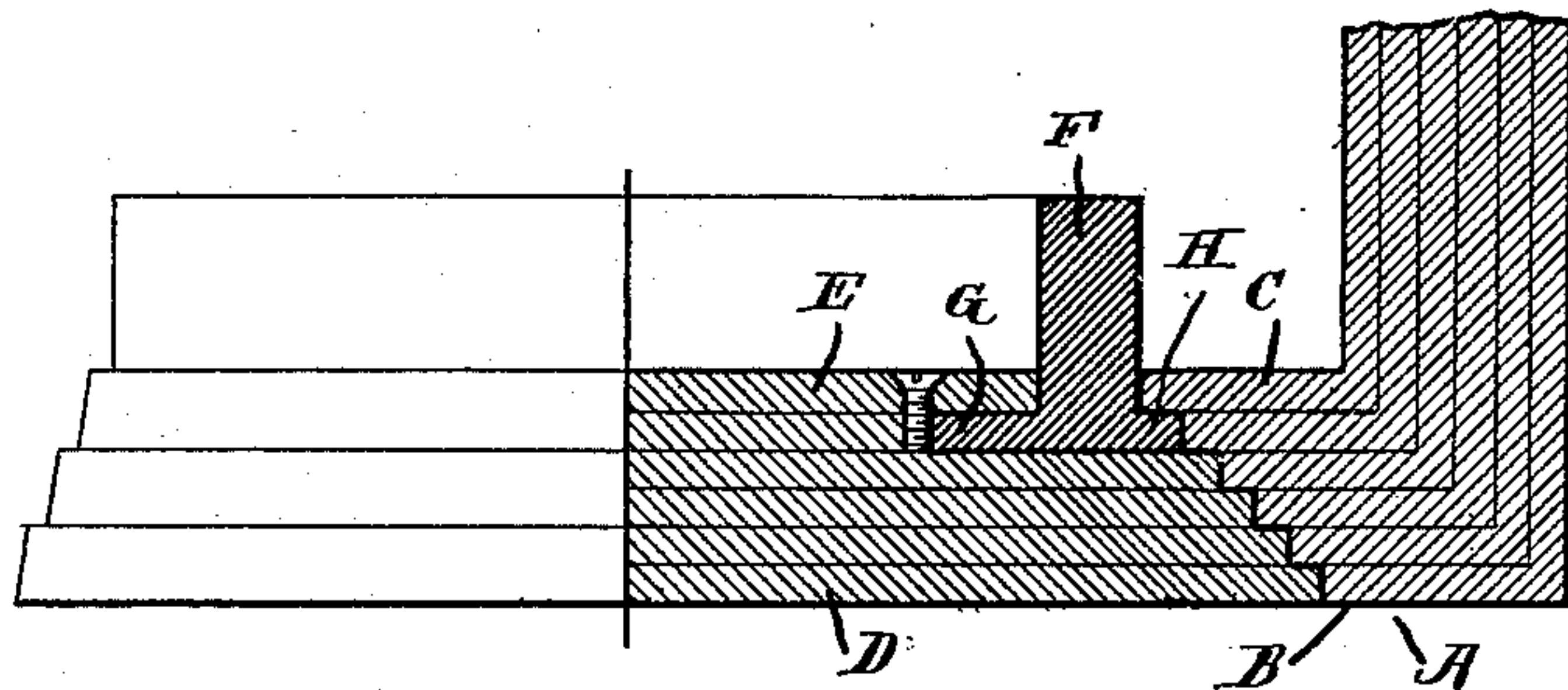


Fig. 2.

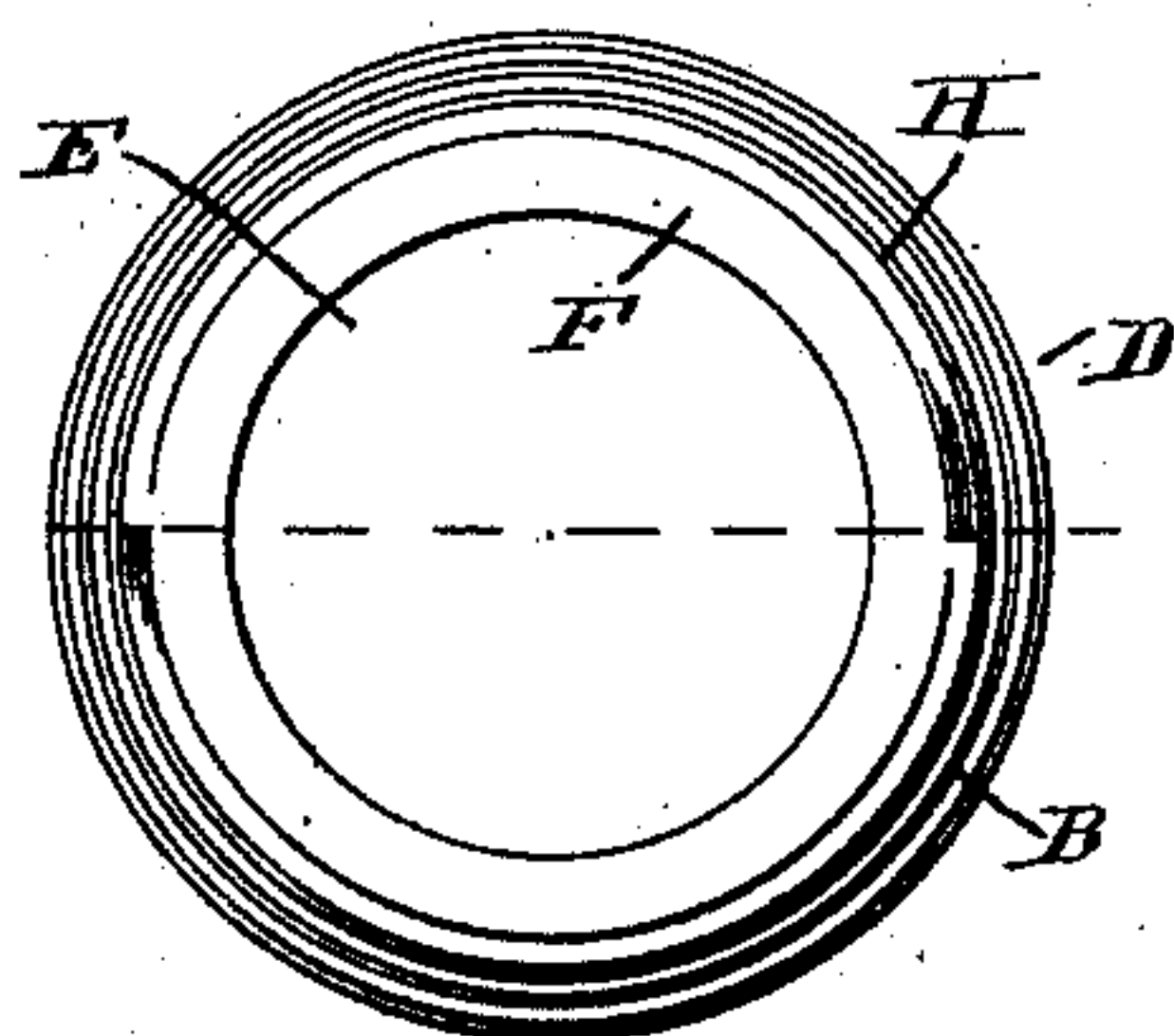
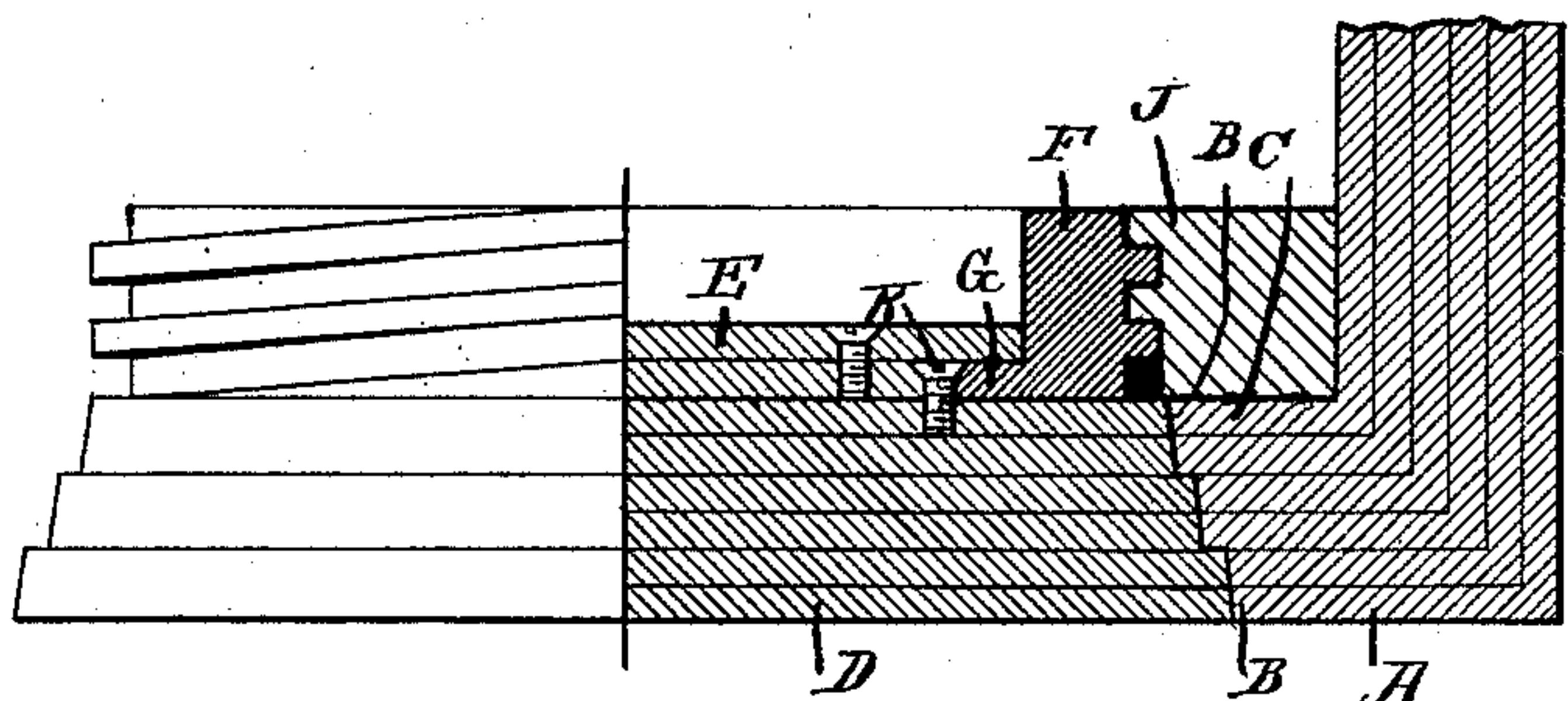


Fig. 4.

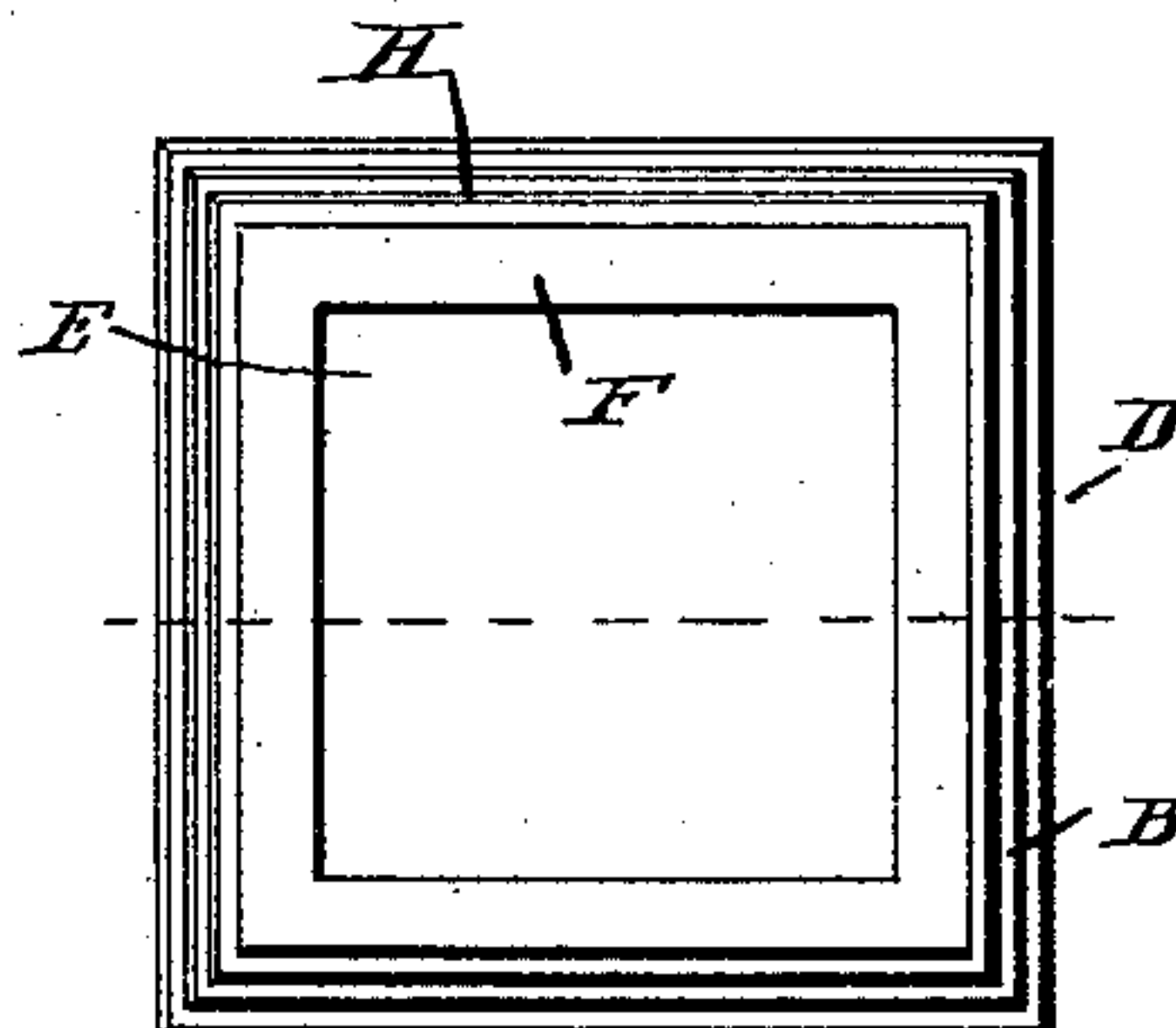


Fig. 5.

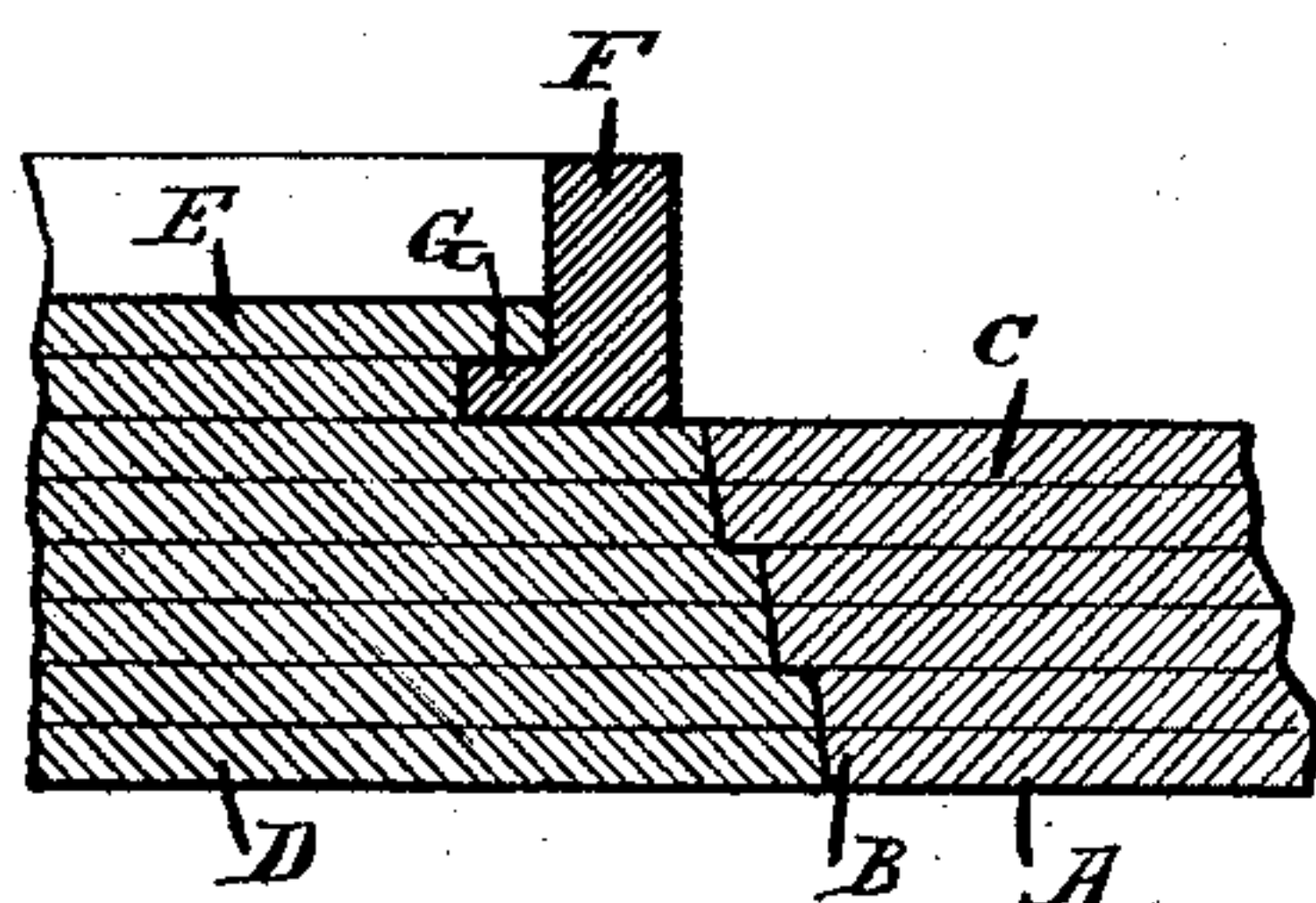


Fig. 3.

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# UNITED STATES PATENT OFFICE.

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## SAFE-DOOR.

SPECIFICATION forming part of Letters Patent No. 472,584, dated April 12, 1892.

Application filed July 8, 1891. Serial No. 398,754. (No model.)

*To all whom it may concern:*

Be it known that I, MOSES MOSLER, of Cincinnati, Hamilton county, Ohio, have invented certain new and useful Improvements in Doors for Burglar-Proof Safes and Vaults, of which the following is a specification.

In modern burglar-proof safes and vaults there is almost invariably secured upon the inner surface of the door a strong ring or frame, which I will herein term the "back-frame." In safes locking by bolt-work this back-frame supports the bolts which pass through holes in the back-frame, and this is the case whether the door be round or square, and in the modern screw-door safes this back-frame bears an exterior thread which screws into a door-nut secured within the safe. The security of the safe depends largely on the firmness with which the back-frame is secured to the door, and the plan most generally followed consists in bolting the back-frame against the inner surface of the door. A modern system of attack on burglar-proof safes consists in firing explosives close to the outer face of the door, giving to the door an inward movement of slight degree but of tremendous velocity, the resulting momentum often being such as to cause parts attached inside the door to break their fastenings and leave the door, the heads or nuts of the screws usually employed in securing the back-frame to the door sometimes flying entirely off.

In my improved door construction I so intermember the back-frame with the door construction itself that it is impossible for the back-frame to leave the door, and I further provide, where desirable, for having the back-frame engage forward of some portion of the door-jamb, so that the back-frame cannot possibly pass through the clear door-opening.

I illustrate my improved door construction in connection with a round screw-door and in connection with a square door and with and without the feature of engagement forward of a portion of the door-jamb.

My improvements will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a plan half-horizontal section of a door exemplifying my improvements and

shown in connection with a door-jamb, forward of which the back-frame engages; Fig. 2, a similar view of a similar construction where the door is a circular screw-door, but without the feature of the engagement of the back-frame forward of the jamb; Fig. 3, a horizontal section similar to Fig. 1, but omitting the feature of the engagement of the back-frame forward of a jamb portion; Fig. 4, a view of the inner face of a screw-door; and Fig. 5 a view of the inner face of a square door, the last two views being upon a comparatively small scale.

In the drawings, A indicates the front of a safe or vault formed in the usual manner, preferably of layers or plates properly united; B, the usual rabbets where the door and door-jamb engage each other; C, the inner portion of the door-jamb; D, the door fitting the door-jamb and constructed, preferably, of layers or plates firmly united; E, the inner layer of the door; F, the back-frame, projecting, as usual, rearwardly from the door and adapted to support the bolts of a door locking by bolt-work or to have exterior threads if the door is a screw-door, Figs. 1, 3, and 5 showing the plain back-frame, while Figs. 2 and 4 show the back-frame threaded for screw-door work; G, an inwardly-projecting flange at the front of the back-frame, this flange engaging forward of the rear plate of the door; H, an outwardly-projecting flange upon the back-frame, engaging forward of a portion of the door-jamb, this feature being omitted from Figs. 2 and 3; J, the usual nut secured within a safe of screw-door construction and engaged by the threads of the back-frame, and K, Fig. 2, screws securing the back-frame to the door-plates in front of it, these screws engaging half their bodies in the flange G of the back-frame.

Referring first to Fig. 3, it will be readily understood that while the back-frame is, as usual, small enough to pass through the clear opening of the door-jamb, and does pass through that opening in the act of opening and closing the door, the back-frame is so built in with the door structure that it cannot be separated from the door by any force which will not separate the back-plate from the door. In the construction shown in Fig. 3 the



mere intermembering of the flange G with the door is sufficient to furnish all needful fastenings for the back-frame; but if the door is a screw-door, then the door-work will all be circular, and provision must be made by which the back-frame will positively rotate with the door. Such provision may be made in any appropriate manner; but I prefer that some of the usual screws employed in securing the door-plates together be allowed to engage half their bodies in the flange G of the back-frame, as indicated at K in Fig. 2, such screws therefore serving a threefold purpose—namely, securing two door-plates together, securing the back-frame to the door portions forward of the back-frame, and securing the back-frame against rotation in the door.

As thus far considered the fastening of the back-frame to the door has formed the safeguard against the back-frame being forced inwardly under the action of concussion; but the outer flange H on the back-frame will, if employed, furnish an additional safeguard. This flange, integrally formed with the back-frame, gives to the back-frame a dimension greater than the clear door, opening and engaging forward of the inner portion of the door-jamb, positively precludes the inward forcing of the back-frame.

It is to be understood that in the building of burglar-proof safes the door-work is first constructed in the soft state and then put together and accurately fitted to the door-jamb, after which the door parts are taken to pieces and the parts properly hardened and then re-assembled. This hardening produces more or less warpage and also more or less contraction or expansion, as the case may be, which distortions often seriously interfere with the accurate fitting of the door in its hard state. Much ingenuity has been expended in attempts to contrive door-work in which these distortions, which are unavoidable, would not affect the assembling, so far as the connection with the unhardened portions is concerned. Again, ingenuity has been expended in other directions on door-work with the result of increasing the evils due to distortions. The back-frames of safe-doors are seldom hardened.

Attempts have been made to attach back-frames to doors by dovetailing systems; but this is expensive and hard to do anything with in hardened work and I avoid it entirely. Again, back-frames have been provided with front flanges, the back-frames being located within the margin of the door and extending partially through the thickness of the door.

Such construction makes the back-frame a part and parcel of the fundamental door structure and is effected to the utmost degree by the distortions in hardening the door-plates, and, furthermore, in such construction all of that rear portion of the door-plates which margin the door lie exterior to the back-frame and have no means of attachment whatever directly to the balance of the door, being completely isolated from it by the back-frame. I avoid such construction entirely. It will be observed that in my construction the fundamental door structure is provided with an exteriorly-open peripheral groove and is in no wise dependent on the back-frame for its own integrity of structure, the back-frame being held within such groove. Again, it will be noticed that the back-frame may be entirely free from perforations for the attaching-screws, the screws K passing through the joint-crack formed between the edge of the flange and the edge of the plate fitting within this flange, the screws screwing forwardly into that portion of the door against which the back-frame seats, these screws therefore serving to clamp the flange to the door and to clamp to the door that edge of the plate fitting within the flange, and also by the engagement of half their bodies in the edge of the flange to prevent the shifting of the back-frame on the door. The entire construction recognizes to the fullest extent the distorting effects of hardening and permits the reassembling and fitting of the fundamental door structure in the hard state before the back-frame is applied to position.

I claim as my invention—

1. In a safe or vault, the combination, substantially as set forth, of a door having a groove presenting itself outwardly around the periphery of the door, and an integrally-formed back-frame forming the exterior margin for the back of the door and provided with an inwardly-projecting flange engaging said groove.

2. In a safe or vault, the combination, substantially as set forth, of a back-frame having an inwardly-projecting flange, a door seated against the flanged face of said frame and having a plate fitting within said flange, and screws K, disposed in the joint between the edges of said flange and last-mentioned plate and engaging half in each of said edges and projecting into the door forward of the flange.

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Witnesses:

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