D. O. PAIGE.

Fire-Proof Safes.

No. 141,376. Patented July 29, 1873.

Fig. 2.

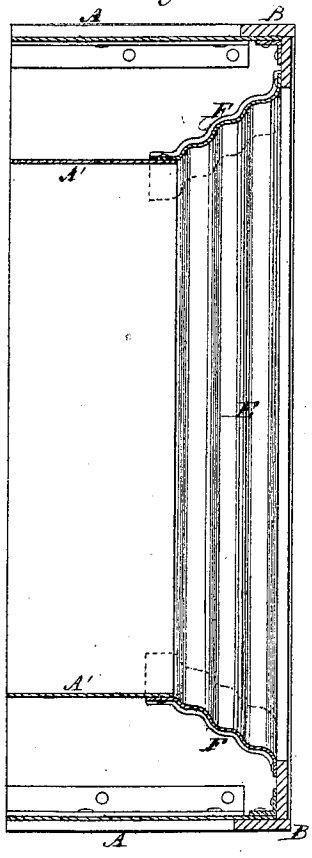


Fig. 1.

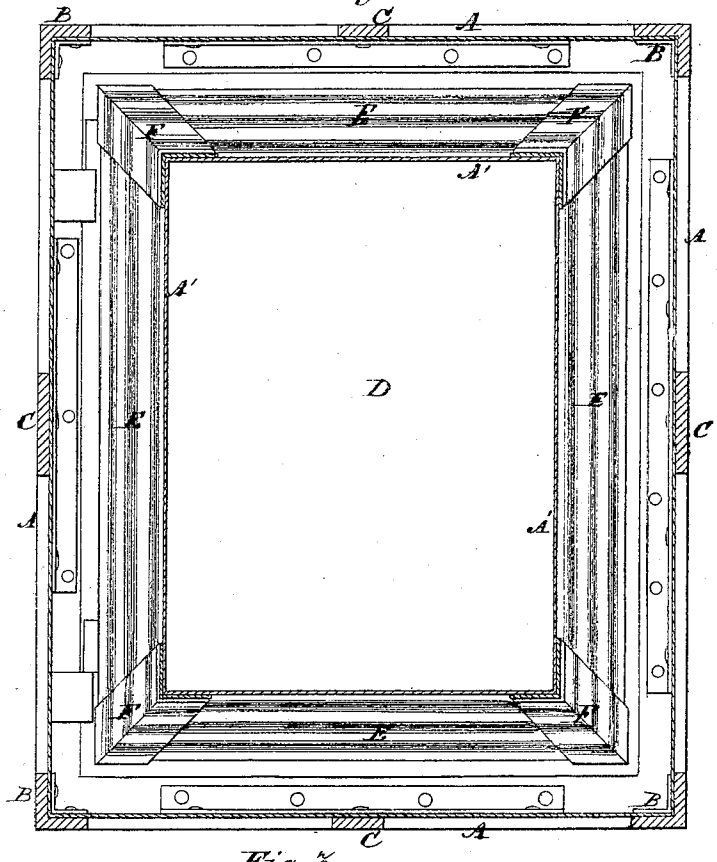


Fig. 4.

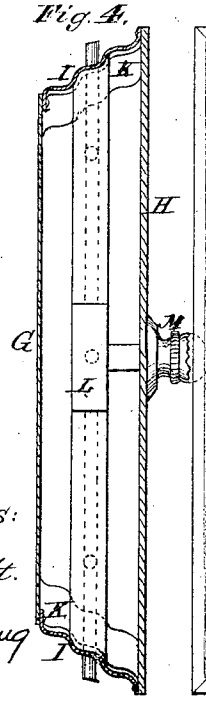
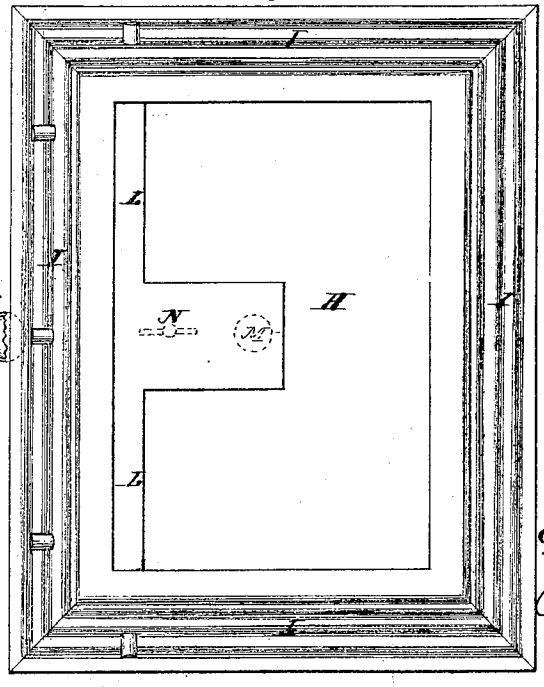


Fig. 5.



Witnesses:
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John R. Young

Inventor:
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his Attys.

AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

DAVID O. PAIGE, OF DETROIT, MICHIGAN.

IMPROVEMENT IN FIRE-PROOF SAFES.

Specification forming part of Letters Patent No. **141,376**, dated July 29, 1873; application filed August 14, 1872.

To all whom it may concern:

Be it known that I, DAVID O. PAIGE, of Detroit, in the county of Wayne and in the State of Michigan, have invented certain new and useful Improvements in Fire-Proof Safes; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a rear elevation of the door-frame of a safe constructed in accordance with my improvements. Fig. 2 is a vertical central section of the same. Fig. 3 is an elevation of the inner side of the door with its covering-plate removed, and Fig. 4 is a vertical central section of said door.

Letters of like name and kind refer to like parts in each of the figures.

In use it has been demonstrated that the most vulnerable portion of a fire-proof safe is the joint between its door and frame, at which point the heat first enters the interior and destroys or injures the contents, and that, consequently, upon the closeness of said joint, its length from front to rear, and the quantity of metal forming the edge of said door and the contiguous portion of the frame, will depend the amount of heat which will pass through the same, and the length of time required for such passage. To improve the construction of this portion of a safe is the object of my invention; which consists in constructing the edge of the door and the corresponding contiguous portions of the frame of or from corrugated wrought-iron, substantially as and for the purpose hereinafter specified.

In the annexed drawing, A and A represent the sides of the safe, constructed, preferably, of or from wrought-iron plates, strengthened by angle-plates B and central horizontal rails C, substantially as shown. Within one side of the safe is provided the usual opening D, the sides of which have a general outward inclination of about forty-five degrees, and are formed of or by plates of wrought metal E, which are corrugated transversely, and at their outer and inner edges are secured to or upon the outer and inner casings A and A′, respectively. At their corners, upon the inner sides of the plates E, are secured suitable angle-plates F, of either cast or wrought metal, which connect said parts together, and, as they exactly correspond in shape to the corrugations of said plates E, said angle-plates effectually close the joints between the same, and form a strong connection. The door is composed of an inner and an outer plate, G and H, respectively, which are connected together by means of four corrugated metal plates, I, that correspond to and closely fit upon the plates E of the door-frame, when said door is in place, the combined plates I of said door having laterally the same dimensions as the interior of said frame. At their ends the plates I are connected together and strengthened by means of suitable angle-plates K, which, while corresponding exactly to the conformation of said plates, are just the reverse of the angle-plates F, employed upon the frame. By this construction of the contiguous portions of the door and frame, the expansion and contraction of the impinging plates must be exactly alike and in the same planes, by which means no liability exists to a derangement of parts by the operation of heat, while so close a joint can be made between said door and frame as to substantially prevent the ingress of heat at such point. The lock and bolt work is contained within a suitable casing, L, which is placed midway between the inner and outer plates G and H, and is secured to or upon the forward edge plate I in such position as to be entirely disconnected from the former, except at the points where the handles M and N extend outward through said outer plate H.

As thus arranged, the cement or other filling employed is placed within the space formed by the plates G, H, and I, and as said filling surrounds the lock and bolt casing L, except at the point where said casing is attached to the forward edge plate, it will be seen that the locking devices are thoroughly protected from the effect of heat, and not liable to be injured so as to prevent them from operating after the safe has passed through a fire.

The advantages possessed by this construction of a safe are, first, the expansion and contraction of the impinging surfaces of the door and its frame are substantially equal and in the same plane, so that the joint between said surfaces can be constructed so close as to practically prevent the passage of heated air to the

interior of the safe; second, from their peculiar shape, transversely, the impinging plates of the door and door-frame possess such rigidity as to enable them to be constructed of or from comparatively thin sheets of metal, possessing but slight conductivity, by which means the quantity of heat transmitted through the same to the interior of the safe is insignificant in comparison with safes of ordinary construction, in which thick plates of cast-iron are rendered necessary at the points named; third, in consequence of the corrugation of the impinging plates of the door-frame and door, their length is materially increased, and a like increase effected in the time required for heat to travel from their outer to their inner edges, while, from the greater extent of surface exposed to contact with the non-conducting filling of the safe and door, a greater proportion of the heat is abstracted from said plates than would otherwise be possible, and but a slight proportion of the same ever reaches the inner side of the safe.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

In a fire-proof safe, a door and a door-frame, when their impinging or contiguous surfaces are constructed of or from corrugated plates of wrought metal, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 9th day of August, 1872.

DAVID O. PAIGE.

Witnesses:

GEORGE B. SARTWELL,

ALEX. H. DOTY.