G. F. KISSAM.

Fire-Proof Shutters.

No. 164,566. Patented June 15, 1875.

Fig 1

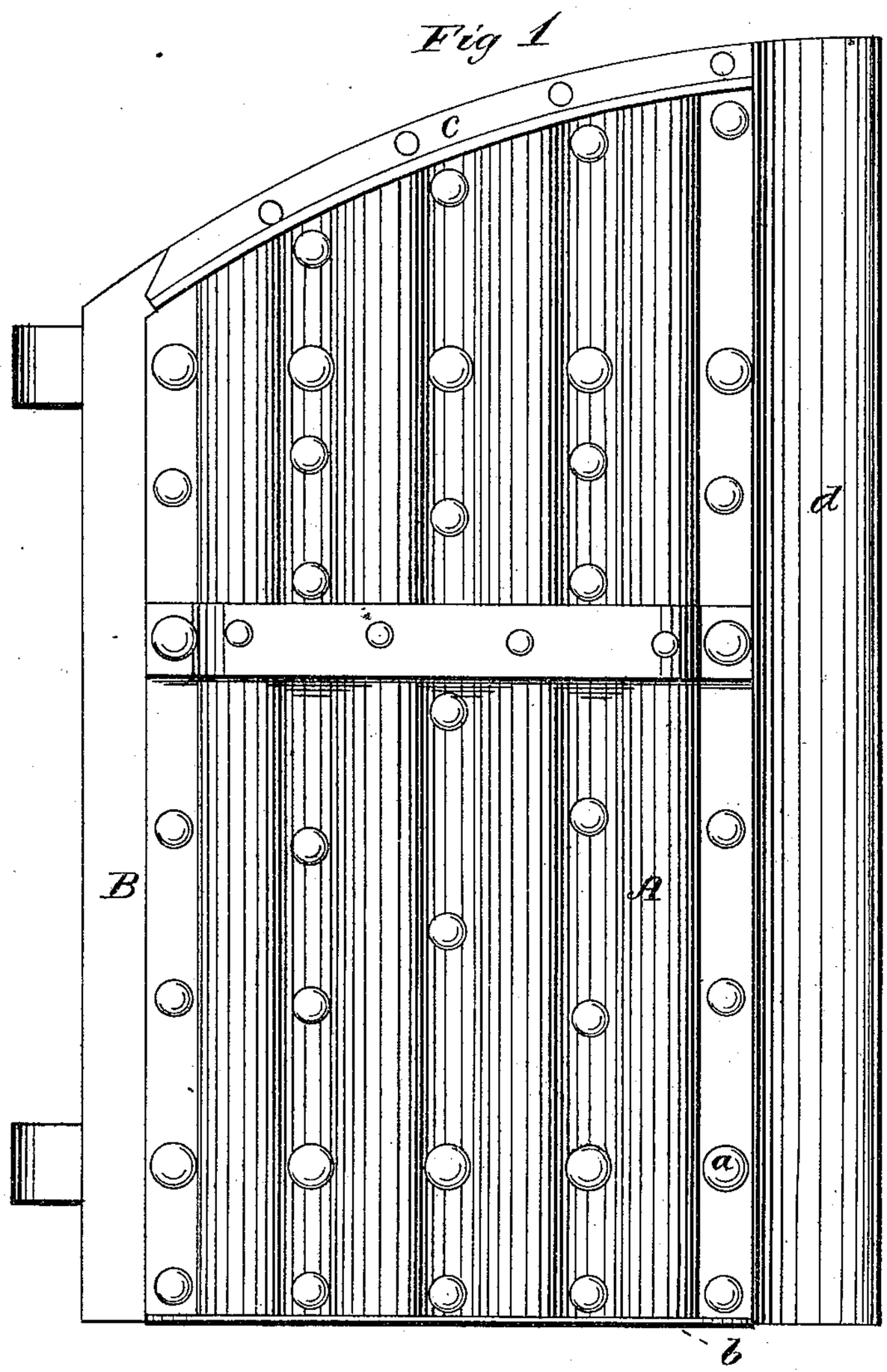

Fig 2.

WITNESSES

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IMPROVEMENT IN FIRE-PROOF SHUTTERS.

Specification forming part of Letters Patent No. **164,566**, dated June 15, 1875; application filed May 22, 1875.

To all whom it may concern:

Be it known that I, GEORGE F. KISSAM, of New York, in the county of New York and State of New York, have invented a new and valuable Improvement in Fire-Proof Shutter; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a side view of my invention. Fig. 2 is a sectional view of the same.

This invention has relation to that class of shutters and doors in which a plate of corrugated metal is used in connection with a plain or non-corrugated sheet of metal.

Previous to my invention such class of shutters possessed no provision against the "buckling" or distortion of the plain sheet when drawn to its place, and, in order to secure the requisite strength and stiffness, necessitated the employment of two plates inclosing a corrugated plate between them or with a surrounding frame. Shutters constructed according to this method have been cumbrous, heavy, and unsightly, as well as very expensive, and it is, therefore, the purpose of my invention to remove these objections and produce a shutter at a greatly-reduced price, and one possessing greater strength and durability, and so constructed that the parts shall mutually strengthen each other, and thereby dispense with the use of a frame or of double plain plates, and that the single plain plate employed may be readily drawn to and fixed in its place without buckling or distortion, heretofore commonly incurred.

The invention, therefore, consists in a shutter or door composed of a corrugated plate and a plain flat plate, the two constituting the opposite sides of the shutter or door firmly joined by parallel rows of rivets arranged within the longitudinal grooves or depressions of the corrugated plate, whereby the desired result is accomplished.

This invention further consists in closing the top of the corrugations with an angle-bar and the openings at the lower end with a flange formed by turning over the lower edge of the flat plate, as will be hereinafter more fully set forth.

In the drawings, A is designed to represent a corrugated plate of metal secured to a flat plate, B. In the process of connecting them together the corrugated plate A is first placed upon the flat plate B, with the corrugations extending lengthwise, after which holes are punched by any suitable machinery through the two plates, where they touch or most nearly approach each other in the grooves or depressions between the ridges or corrugations of the plate A. In these holes suitable rivets *a* are placed, and commencing along one edge of the plate, as thus arranged, the rows of rivets are headed or closed down in succession. The close contact of the two plates in parallel lines along the rows of rivets, the rigidity given to the said rows by the relative shortness of the rivets required in thus joining the plates, and the fact that, in addition to its own inherent strength, each ridge or corrugation of the sheet B is made to act as a strengthening-rib to the plate A, render the shutter thus constructed sufficiently strong, rigid, and permanent for all the exigencies of actual use, and at the same time the manner of riveting longitudinally with the corrugations effectually takes out what is technically known as "buckle," the corrugated sheet being so much stiffer than the plain sheet that the latter is drawn out, making it perfectly smooth when the rivets are tightened.

To keep out the rain and moisture of the atmosphere from between the plates A B, and prevent the rusting of the same, it is deemed necessary to close the openings at both top and bottom formed by the corrugations in the plate A, and this is accomplished by turning a flange, *b*, upon the lower edge of the flat plate B of sufficient width to cover the openings, while the openings in the upper end are closed by riveting or otherwise securing to the plate B an angle-bar, *c*.

It will be seen that the openings are tightly sealed, confining the air therein, and making a better non-conductor of heat than if they

are left open, and in case of a fire surrounding the shutter, if left open, the chambers or openings formed by the corrugations would act as flues, and, consequently, increase the heat passing through them. The plate B is also formed with a single corrugation, *d*, at its outer edge, running the entire length of the plate, so that when making two shutters for one opening the left-hand shutter will lap over the other, making a tighter and firmer joint or lap when closed, and also greatly adding to the strength of the plate.

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

1. As a new article of manufacture, a metallic shutter composed of a corrugated plate, A, and flat plate B, rigidly connected together by parallel rows of rivets, as specified, the openings formed by the corrugations being closed at both top and bottom, substantially as and for the purpose set forth.

2. The shutter herein described, consisting of the corrugated plate A and the flat plate B, the latter having a flange, *b*, turned thereon, and an angle-bar, *c*, secured thereto, for closing the openings in the corrugated plate, for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

GEORGE F. KISSAM.

Witnesses:
J. S. McCLURE,
WM. H. CLARKSON.