No. 704,771. Patented July 15, 1902.

T. BAILEY.

FIREPROOF BUILDING.

(Application filed June 22, 1901.)

(No Model.)

FIG. 1.

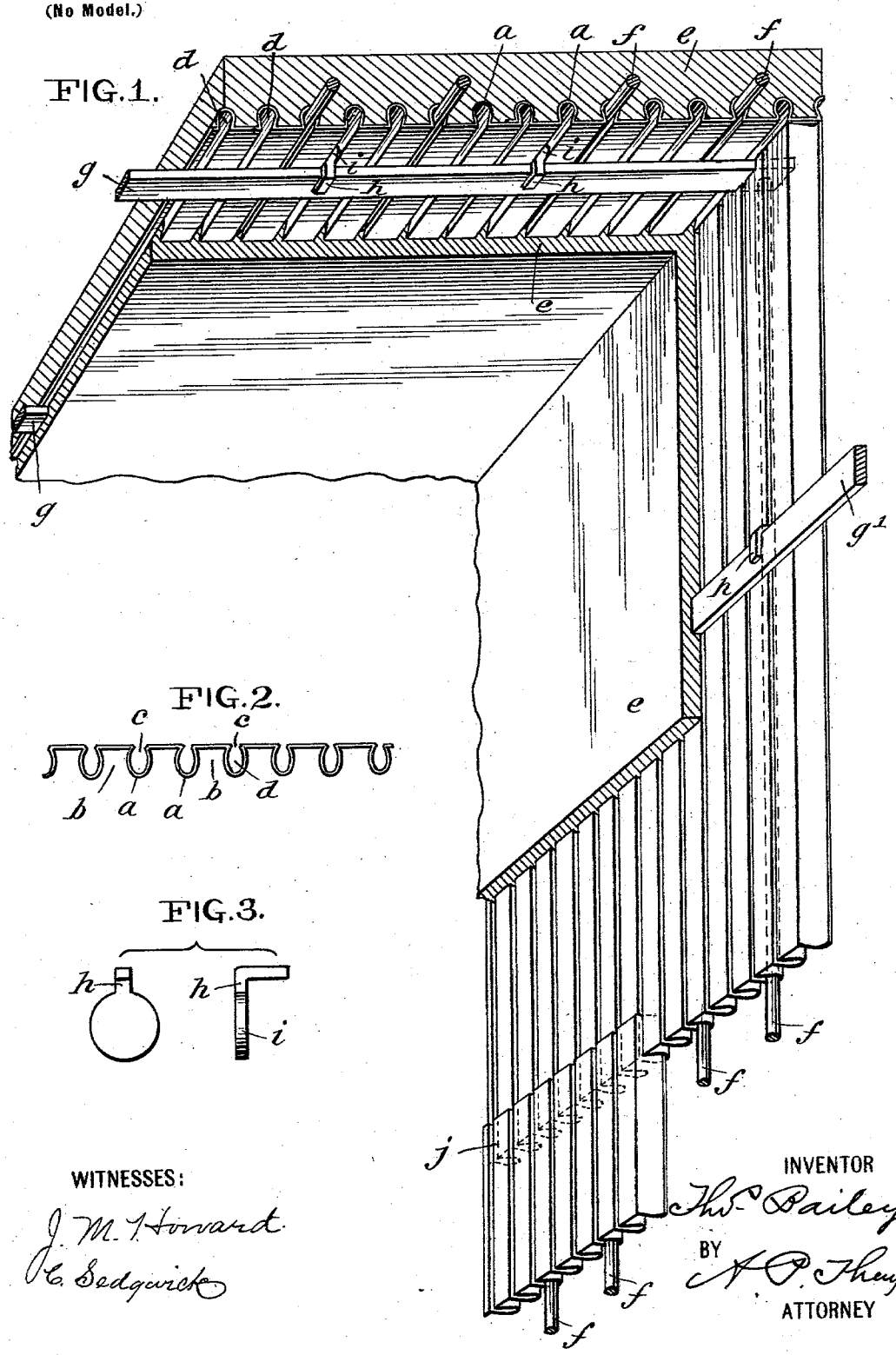

FIG. 2.

FIG. 3.

WITNESSES:

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FIREPROOF BUILDING.

SPECIFICATION forming part of Letters Patent No. 704,771, dated July 15, 1902.

Application filed June 22, 1901. Serial No. 65,541. (No model.)

To all whom it may concern:

Be it known that I, THOMAS BAILEY, a citizen of the United States of America, and a resident of New York city, county and State of New York, have invented certain new and useful Improvements in Fireproof Buildings, of which the following is a specification.

My invention consists of improvements in fireproof constructions of walls, partitions, and other parts of buildings, as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 represents part of a side wall and part of a ceiling or roof in perspective view with some of the parts in section. Fig. 2 represents an end view of an improved construction of corrugated metal sheets specially adapted for carrying out the invention, and Fig. 3 represents in front and side views a coupling device of improved construction for connecting transverse stiffening-bars to the insides of the corrugated sheets.

For walls and partitions consisting, essentially, of corrugated iron I make dovetail corrugated sheets with ribs and grooves of the different sides, differing in shape for adaptation to the requirements of the different sides, as follows:

For the outside, which is to be galvanized or painted, I make the protruding narrow ribs *a* intermediate of the wider grooves *b*, said ribs being somewhat rounded in the protruding part and of any approved height relatively to the plane of the sheet, and the grooves *b* being flat in the bottom and broader than the greatest breadth of the ribs *a*, with narrow opening slots *c* from the inside of the sheet into the grooves *d*, formed by producing the ribs *a*. Thus the exterior of the sheet presents the appearance of the usual board-and-batten construction, and the inside is practically a plain surface, with "undercut" or dovetail grooves at intervals, which may be plastered, and the plaster will be effectually anchored in the grooves *d*, the sheets being applied with the corrugations ranging vertically, as shown in Fig. 1, and wherein *e* represents the inside coating of plaster, such sheets have great load-carrying strength, and when of sufficient length to reach "between joints" in a building, particularly when reinforced with the plaster *e*, and will not under ordinary circumstances need other strengthening, but when excessive loads are to be carried the sheets may and preferably will be reinforced by rods *f*, placed in grooves *d* and seated on suitable foot-supports, with weight-carrying caps, as the bars or plates *g*, resting on the upper ends. When such reinforcing-rods *f* are employed, the ribs *a* will have greater projection, and the grooves *d* will be deeper to provide more space for the anchor elements of the plaster, and such ribs and grooves may be so extended as to permit flat bars to be used for excessive strength.

The sheets may be reinforced transversely by bars *g g'* to prevent buckling, said bars being placed against the flat insides of the sheets and hooked thereto by hooks, as *h*, detachably secured in the grooves *d* and projecting sufficiently to engage the bars. The hooks may of course be secured in said grooves in any approved way; but the means of securing them which I prefer consists of the disk-shaped T-head structure *i* of the hook, adapted to be inserted edgewise through the slot *c* and being in a plane at right angles to the hook-prong, so that being turned after the head has been entered the head will be locked in the groove and the prong will lock the bar, and the parts will be permanently secured in the locked positions by the plaster subsequently applied.

It will be apparent that it is important for the proper fastening of the bars that the wide grooves be flat on the top against which the bars bear for stability until the plaster is applied, and it is obvious also that the structure will be more stable afterward.

When the sheets are not of sufficient length to reach from one bearing-point to another, they may be readily spliced by telescoping one within another, as represented at *j*, and the joints will be reinforced by the plaster.

If desired, the outside grooves *b* may be made of suitable contour and dimensions to hold plaster or cement, and thus walls of greater thickness and stability may be made.

Ceilings and roofs and even floors may be similarly constructed, as represented in the upper part of Fig. 1; but in such cases the corrugations will be greater in depth for greater lateral stiffness.

The retaining-hooks are alike applicable

for securing the stiffening-bars whether the ribs *a* and grooves *d* are of rounded or angular form; but for effectively securing the bars *g'* it is essential that the grooves *b* be flat in the bottom, with corresponding flat reverse sides of the ribs of said grooves to afford fair and substantial bearing for the bars. The acute angles at the junctions of the narrow and wide ribs are essential for confining the retaining-hooks *h i*, so as to hold the bars against the wide ribs without slackness. The rounded ribs are somewhat stronger than those of angular form, and such form is otherwise preferable for outside ribs when not to be coated with cement.

The retaining-hooks are alike applicable for securing the stiffening-bars to the angular as well as the rounded dovetail grooves, and I include the use of such hooks in both forms.

What I claim as my invention is—

1. The improved dovetail corrugated sheet-metal building-sheets, having exterior rounded ribs and interior flat ribs with contracted interior plaster-holding grooves and wider exterior grooves, the wide ribs being flat on the top both outwardly and inwardly with acute angles at the junctions of the top and the sides, and the narrow grooves being rounded on the top both outwardly and inwardly and at the junctions with the sides.

2. The combination with the dovetail corrugated sheet-metal building-sheets having exterior rounded ribs and interior flat ribs with contracted interior plaster-holding grooves and wider exterior grooves, the wide ribs being flat on the top both outwardly and inwardly with acute angles at the junctions of the top and the sides, and the narrow grooves being rounded on the top both outwardly and inwardly and at the junctions with the sides, of hooks for securing bars to the flat ribs, each having a head insertible edgewise in the narrow interior plaster-holding grooves and securable therein by the broader flatwise dimensions set transversely to the groove in the adjustment of the hook after being inserted, for engaging the bar.

3. The combination with the dovetail corrugated sheet-metal building-sheets, having exterior rounded ribs, interior flat ribs and contracted interior plaster-holding grooves, of reinforcing-rods inserted in the plaster-holding grooves.

4. The combination with the dovetail corrugated sheet-metal building-sheets having exterior rounded ribs, interior flat ribs and interior contracted plaster-holding grooves, of the lateral stiffening-bars, and retaining-hooks therefor detachably secured in the plaster-retaining grooves and securing said stiffening-bars on the flat ribs.

5. The combination with the dovetail corrugated sheet-metal building-sheets having exterior rounded ribs, interior flat ribs and contracted interior plaster-holding grooves, of reinforcing-rods inserted in the plaster-retaining grooves, lateral stiffening-bars and retaining-hooks for said bars detachably secured in the plaster-retaining grooves.

6. The combination with the dovetail corrugated sheet-metal building-sheets having exterior ribs, interior flat ribs and contracted interior plaster-retaining grooves, of the lateral stiffening-bars and retaining-hooks for said bars, said hooks having disk heads insertible edgewise in the plaster-retaining grooves, and securable therein crosswise, and in the crosswise position securing the bars.

7. The combination with the dovetail corrugated sheet-metal building-sheets having exterior ribs and interior contracted plaster-holding grooves, of lateral stiffening-bars and retaining-hooks for securing said bars to the sheets, said hooks having a head insertible edgewise in the groove, but interlocking when turned sidewise, and a prong adapted to engage the bars when so turned, and the plaster fixing said bars and hooks in position.

Signed at New York city this 15th day of June, 1901.

THOMAS BAILEY.

Witnesses:
C. SEDGWICK,
A. P. THAYER.