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FIREPROOF BUILDING CONSTRUCTION.

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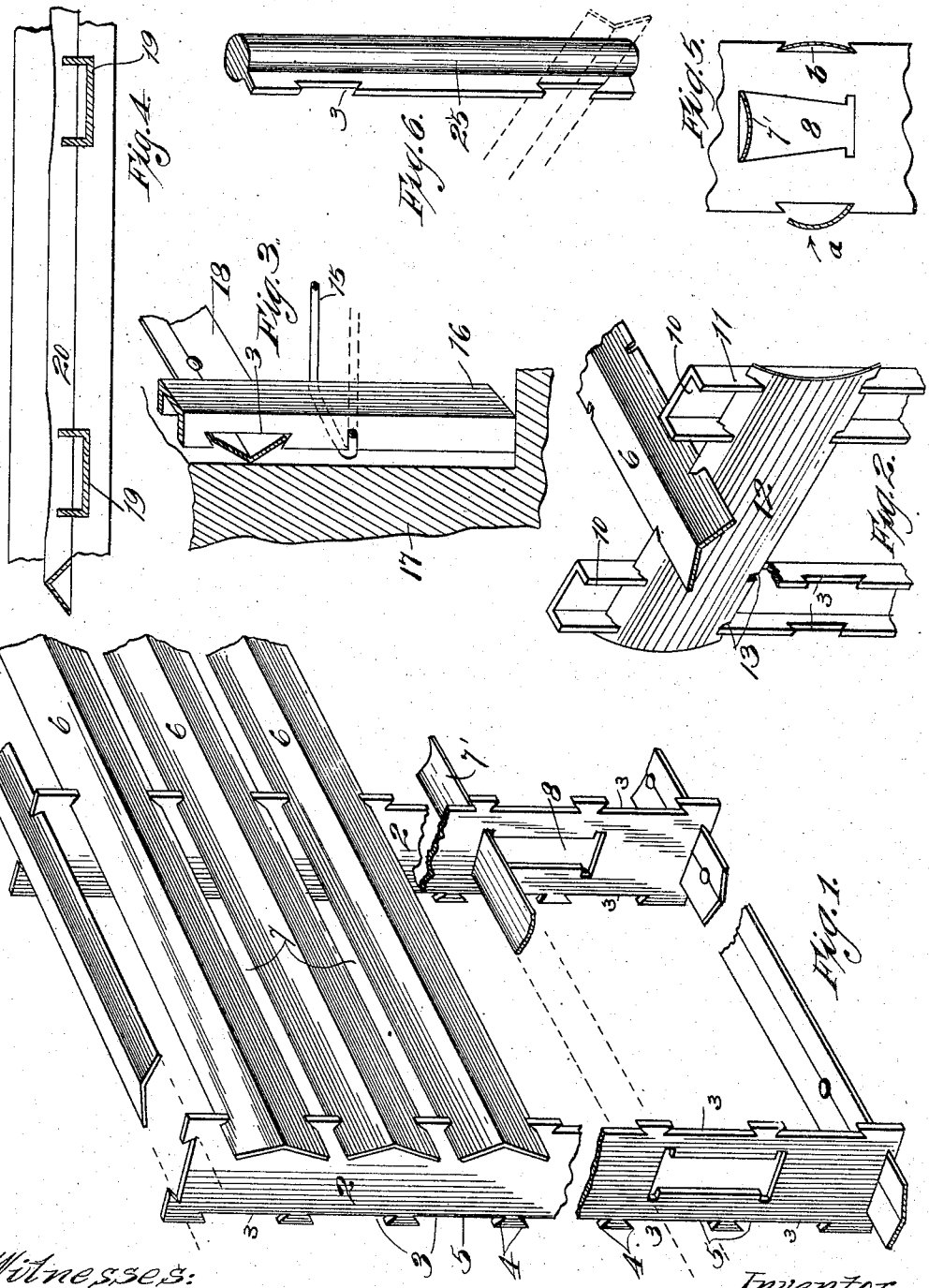
1,027,641. Patented May 28, 1912.



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UNITED STATES PATENT OFFICE.

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FIREPROOF BUILDING CONSTRUCTION.

1,027,641. Specification of Letters Patent. Patented May 28, 1912.

Continuation of application Serial No. 596,060, filed December 7, 1910. This application filed March 25, 1911. Serial No. 616,830.

To all whom it may concern:

Be it known that I, CORNELIUS COLLINS, citizen of the United States, residing at Burlingame, in the county of San Mateo and State of California, have invented new and useful Improvements in Fireproof Building Construction, of which the following is a specification.

This invention relates to interlocking structures and particularly to interlocking devices for sheet metal work.

The object of this invention is to provide a simple, rigid, reliable interlocking or interlinking device for sheet metal or other work; to provide an interlocking structure whereby the elements comprising the same may be prepared at small expense for interlocking at the factory, shipped to the place of erection and there assembled with a minimum amount of labor; and to provide an interlocking device, which, when once assembled, is extraordinarily strong and not liable to be quickly displaced, is of such design as to be readily susceptible of various adjustments and is adaptable to a variety of applications.

The invention consists of the parts and the construction and combination of parts, as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a perspective view of a form of the interlocking structure. Fig. 2 shows the interlocking device as applied to a channel iron work, forming studding. Fig. 3 shows an adaptation of the interlocking device for furring. Fig. 4 is a further adaptation of the interlocking structure as a reinforcing means for thin walls or partitions. Fig. 5 is a diagrammatic view showing the method of assembling and expanding one of the interlocking elements. Fig. 6 is a perspective view of the adaptation of my improved method of fastening, showing a reinforcing bar or fence post provided with a dovetailed slot.

The function of the present invention is to evolve and provide a method and device for permitting the rapid and inexpensive erection of sheet metal structures and other forms wherein the several elements are to be securely interlocked or interlaced against relative movement, and particularly to permit the erection of structures at a minimum expenditure of energy, thus conserving labor and cost.

The interlocking method and device comprehended in the present invention includes the formation in structures or elements to be interlocked of suitably shaped slots or openings which may be formed within the area of the body of the elements, or may be formed at desirable spaces along its edges.

As shown in the several figures of the drawings, a method and device for securing the substantially rigid and easily manipulated interlocking of several elements is applied in various adaptations.

In Fig. 1, 2 represents a flat strip of material which may be of any substance, but which in the present invention represents metal, and this strip or sheet 2 here represents vertical studs, such as are used in the erection of buildings. The edges of this strip of material or stud are provided at various spaces with slots or elongated nicks 3 having their mouth portions of less width than their bottoms. That is to say, the distance between the outer points 4 of the slot or nick is less than the length of the line formed by the bottom 5 of the slots.

I do not wish to be limited to the form, contour or outline in plan of the slots, the object and aim of the differential, longitudinal lengths of the slot openings being to insure the retention in the slots of such elements or pieces as the concavo convex members 6, which in Fig. 1, represent lathing applied to the vertical studs 2.

In the adaptation of the device as illustrated in Fig. 1, laths are horizontally spaced from each other a sufficient distance to prevent spaces 7 between their edges, preferably of such width as to form retaining keys on plaster when the latter is applied to the exterior surface of the lathing strips 6. The members 6, which, as stated, are concavo convex, or longitudinally and centrally hipped, are adapted to be placed longitudinally against the several vertical studs 2 and one of their edges passed into the slot 3, so as to permit the lath or member 6 to be pivotally swung into the slot 3 with one of its edges resting against the shoulder of the slot 3 as a fulcrum. The width of the hipped member 6 is small

enough to permit the same to be readily swung into the slot 3 so that the longitudinal edges of the member 6 will rest against the bottom 5 of the slot 3. When one of the members 6 has thus been placed in position against the studding 2, it is then subjected to a blow on its raised back or hip portion by a hammer with sufficient force to transversely expand the member 6, so that its longitudinal edges adjacent to the point of the blow and which rest against the bottom of the slot 3 are projected transversely into binding and interlocking engagement with the shoulders formed at the transverse ends of the slot 3. When it is desired to brace or reinforce the vertical stud members 2 transversely, the concavo convex or longitudinally curved tie or brace, as 7′, may be inserted into a central opening 8, the transverse ends of which are of greater length than the transverse width of the remaining portion of the opening 8. Likewise, when the reinforcing or bracing member 7′ has been inserted into the opening 8 and moved into position against its undercut shoulders or ends, the brace 7′ may be expanded at a point adjacent to the studding by the application of force with a hammer or other suitable tool.

In Fig. 2 I have shown an adaptation of the method of securely interlocking a set of vertical members 10, here shown as channel irons, having their flanges 11 notched or slotted similarly to the member 2 of Fig. 1; and into the notches of the channel irons 10 there is inserted a tie 12 which may or may not be provided with nicks 13 along its edge, so spaced as to intermesh with the shoulders formed at the bottom of the slot 3. The tie 12 may be bent throughout its length so as to be angular in cross section, as indicated by the lath member 6, Fig. 1, or may be concavo convex, as is clearly shown in Fig. 2. When the tie 12 has been swung into position against the bottom of the slots in the flanges of the members 10, the tie is expanded adjacent to its inter-engaging points by a blow from a hammer, thus permanently locking the members.

In Fig. 3 the method and device forming an interlock is shown as applied to vertical furring members 16, which are provided with slots 3, undercut at their ends to form shoulders; the distance between the outer ends of the shoulders being less than the length of the bottom of the slot. In modern architectural construction a great amount of what is known as "expanded metal lath" is used and when this lath is applied to studding in a building, the laborer attaches the lath to the building by passing a wire, such, for instance, as is indicated at 15, around the studding and then twisting the wire so as to draw the metal lath closely against the surface of the studding. My method of interlocking members is particularly adaptable in the use of studding represented at 16, in Fig. 3, and I obtain a sufficient space between the back edges of the studding 16 and the wall of the building, as indicated at 17, by employing spacing members 18, which are bent angularly throughout their length, and the degree of the angular bend of the longitudinal edges toward each other determines the distance that the furring 16 is projected away from the wall 17, when the members 18 are inserted and interlocked with the rear edges of the furring 16.

In Fig. 4 my interlocking device is employed to substantially connect together vertical reinforcing rods 19 which may be provided with slots, as 3, in their edges, into which slots are inserted transverse reinforcing strips 20 expanded in the slots 3, so as to positively interlace the several vertical members 19. When this form of interlocked reinforcing is employed, a rigid and substantial structure results and the finishing plaster may be applied in a thickness considerably less than is the usual practice. As stated, the actual width transversely of the concavo convex members hereinbefore referred to is preferably just sufficient to permit them to swing freely into transverse position against the bottom 5 of the slots 3 in the members which are to be interlocked. This is shown in Fig. 5 at *a*. When the hipped or concaved members have been swung into position, a blow from a hammer will transversely expand the members to the position clearly indicated at *b* in Fig. 4, which so increases the transverse width of the concaved or hipped members as to cause them to rigidly bind against the shoulders at the ends of the slots 3.

In the form of my invention illustrated in Fig. 1 the upper and lower ends of the studding members 2 may be readily and securely attached in position to the structural portion of the building by inserting top and bottom members in the transverse slots 3 at the ends of the studding 2, then expanding the top and bottom members to interlock with the studs 2 after which the nails may be driven to positively prevent end movement of the studs 2. As stated, my method of interlock is adapted to innumerable structures and in Fig. 6 is shown a bar 25, which may represent reinforcement or fence post, having undercut recesses 3 into which may be expanded the expansible transverse members, as 6 or 7′.

By the word "dovetail" in the claims, I refer to any undercut form of slot which will have the property and function of forming an interlock when a hipped or convexed strip is expanded into it, within the principle of the invention.

This application is in continuation of,

embodies, and supersedes my prior application, Serial Number 596,060, filed December 7, 1910.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. A structural interlock, comprising a metal strip provided with a slot, the bottom of which slot is wider than its mouth, and a longitudinally hipped, bendable strip having a width sufficient to pass through the smaller portion of the slot and to rest upon the bottom of the slot, and adapted to be expanded transversely in the plane of the bottom of the slot so as to bind against the side walls of the slot.

2. An interlocking structure, comprising a member having a perforation substantially in the outline of the letter I, and an interlocking strip having an endwise extending hump insertible into the perforation and adapted to have its lateral edges engaged with the lateral recessions in the I perforation when the interlocking strip is flattened.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CORNELIUS COLLINS.

Witnesses:
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