L. J. GRAFF.

FURRING CONSTRUCTION FOR STEEL CEILINGS.

APPLICATION FILED JUNE 30, 1919.

1,334,607.

Patented Mar. 23, 1920.

2 SHEETS—SHEET 1.

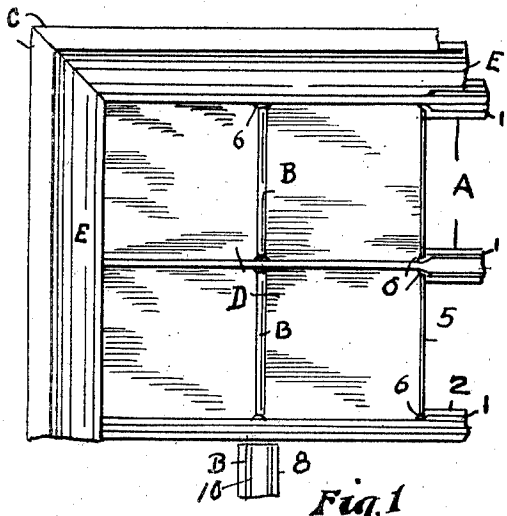


Fig. 1

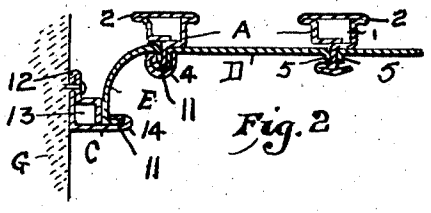


Fig. 2

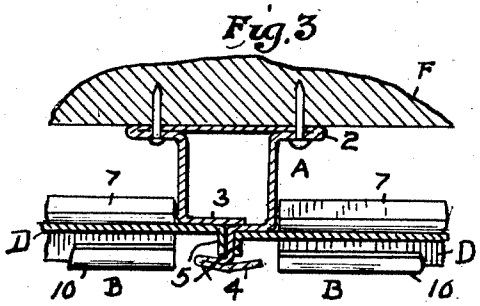


Fig. 3

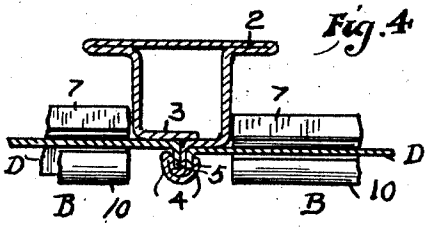


Fig. 4

Fig 5

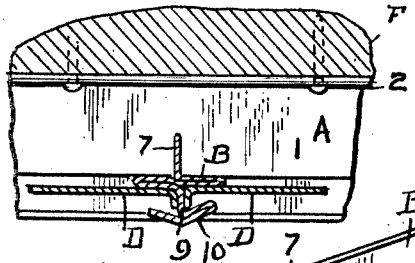


Fig. 7

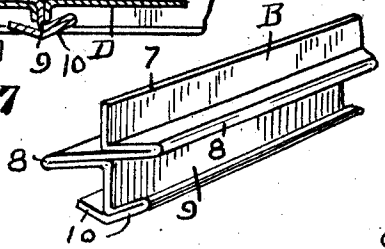
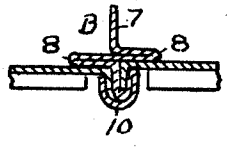


Fig. 6



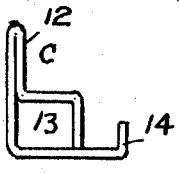
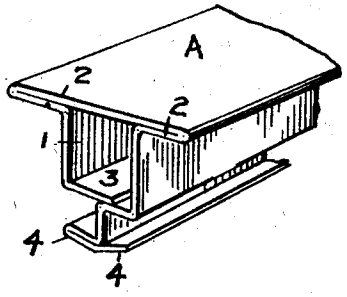


Fig. 9

Fig. 8



WITNESSES

R. F. Dilworth

INVENTOR

Louis J. Graff.

by Edward A. Lawrence

his attorney.

L. J. GRAFF.

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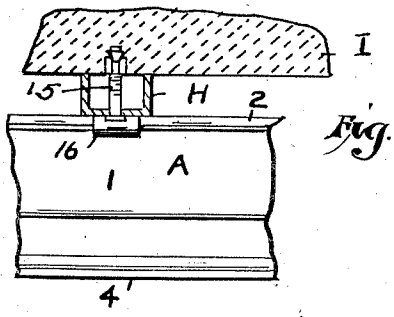


Fig. 10

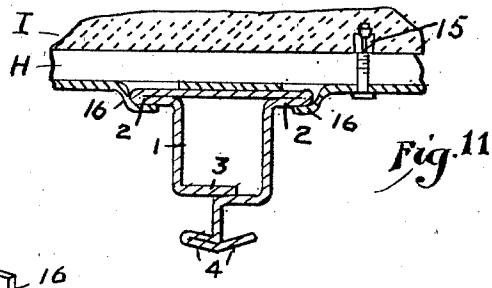


Fig. 11

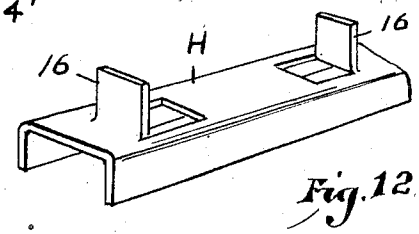
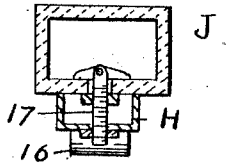


Fig. 12

Fig. 13



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R. F. Dilworth

INVENTOR

Louis J. Graff.

by Edward A. Laurence,

his attorney.

UNITED STATES PATENT OFFICE.

LOUIS J. GRAFF, OF PITTSBURGH, PENNSYLVANIA.

FURRING CONSTRUCTION FOR STEEL CEILINGS.

1,334,607. Specification of Letters Patent. Patented Mar. 23, 1920.

Application filed June 30, 1919. Serial No. 307,514.

To all whom it may concern:

Be it known that I, LOUIS J. GRAFF, a citizen of the United States, and residing in the city of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented or discovered new and useful Improvements in Furring Constructions for Steel Ceilings, of which the following is a specification.

My invention consists in new and useful improvements in metal furring strips for steel ceilings.

In the steel ceiling art, as now practised, wooden furring strips are used and in case of fire they readily char or burn, ruining the ceiling and often causing the ignition of the wooden joist or other inflammable portions of the building. Metal furring strips have been designed but they have simply served as conductors of heat to inflammable portions of the building and have been so generally unsatisfactory that they have failed to appear commercially in the art.

The object which I have in view is the provision of metal furring strips which may be conveniently installed, which will properly support the ceiling and which will protect the inflammable portions of the building.

With these ends in view, I have produced a furring strip formed by bending up a strip of metal in box form, having top lateral flanges by means of which it may be attached to the building and having a depending portion with lateral flanges upon which the flanged edges of the ceiling plates rest and which are then clenched against said edges.

I also show a new and improved side furring strip formed on the same principle. I also show a new and improved form of cross furring strips which are assembled with my furring strips to support the ceiling. I also show novel means for attaching my furring strips to the underside of fire proof floors, such as of concrete or tile.

Other novel features of construction and arrangement of parts will appear from the following description.

In the accompanying drawings, which are however merely intended to illustrate the principles of my invention without limiting the scope of the same to the construction shown, Figure 1 is an inverted plan view showing a portion of a steel ceiling supported by my improved furring strips; Fig. 2 is a view in vertical section showing ceiling plates and a side plate supported by my improved furring strips; Fig. 3 is an enlarged vertical section showing a furring strip supporting two ceiling plates together with a pair of cross furring strips, the flanges being unclenched; Fig. 4 is a similar view showing the flanges clenched; Fig. 5 is a vertical section taken at right angles to that in Figs. 3 and 4 showing a cross furring strip supporting two ceiling plates with its flanges unclenched and Fig. 6 is a similar view showing said flanges clenched; Fig. 7 is a broken perspective of one of the cross furring strips; Fig. 8 is a similar view of one of the furring strips; Fig. 9 is an end view of one of the side furring strips; Fig. 10 is a vertical section showing the method of securing my furring strips to the underside of a concrete floor; Fig. 11 is a vertical section taken at right angles to Fig. 10; Fig. 12 is a broken inverted perspective of the clamping member by means of which I secured my furring strips to the under side of a concrete floor, and Fig. 13 is a vertical section showing my furring strips secured to the underside of a hollow tile floor.

The following is a detailed description of the drawings, reference being first had to Figs. 1 to 9 inclusive.

A represents the main furring strip, B the cross furring strips and C the side furring strips, D represents the steel ceiling plates and E the curved side plates which are used to cover the angle between the ceiling and wall. F represents the wooden joists and G the wall.

The main furring strips A are formed by bending up a strip of sheet metal into the form shown, and comprise the box body 1 having two lateral top nailing flanges 2, depending vertical web 3 and lateral ceiling plate supporting flanges 4 which are preferably slightly turned upwardly, as shown. The furring strips are nailed through the flanges 2 to the joist F at the proper intervals to receive the ends of the plates D which are provided along their four sides with downturned edge flanges 5. The plates D are usually of square form and about two feet either way. The corners of the plates are preferably clipped, as at 6 in Fig. 1, so that the flanges 5 do not extend clear to the ends, thus providing clearance in assembling. The size of the plates of course determine the intervals between the main furring strips A. The flanges 4 of the furring strips

A are clenched up against the end flanges 5 of the ceiling plates D. Between adjacent ceiling plates I interpose one of my cross furring strips B also formed by bending up a strip of sheet metal and comprising a vertical top web 7, a pair of oppositely disposed lateral fins 8, a lower vertical web 9 and a pair of bottom lateral clenching flanges 10 which are preferably upwardly turned, as shown. The fins 8 rest upon the top surfaces of the two adjacent ceiling plates, the web 9 extends down between the plates and the side flanges 5 of the ceiling plates rest upon the flanges 10 of the cross furring strips, which flanges 10 are then clenched up against the ceiling plate flanges 5.

At the sides I provide the curved ceiling plates E whose upper and lower ends are provided with downturned flanges 11, the upper flanges resting upon the flange 4 of the adjacent main furring strip A, as shown in Fig. 2. The side furring strips C are bent up from a strip of sheet metal and comprise a vertical top nailing flange 12 by means of which the strip is secured to the wall, a box body 13, and an outwardly extending bottom flange 14 of L-shape upon which rests the bottom flange 11 of the plates E. The flanges 14 are then clenched, as shown against the flanges 11.

It is evident from the above that the ceiling can be quickly and easily installed in a building by using my furring members and this installation is facilitated by the fact that the main furring strips may be sprung laterally to slip in the end plates which cannot be conveniently slid into place. The completed ceiling is held securely in place but in such a manner than an ample air space is provided between the ceiling plates and the building elements to which they are attached, the main and wall furring strips aiding in the heat insulation because of their box form. Therefore the ceiling plates may reach a very high temperature without damaging the wooden joist or other inflammable portions of the building and no substantial damage to the ceiling will result because the edges of the plates cannot be torn loose from the furring and therefore the plates cannot buckle but can only be destroyed by a melting heat.

I have described above the attachment of the furring elements to wooden joists, but it is frequently necessary to attach a steel ceiling to the under surface of a fireproof floor, such as one of concrete or hollow tile.

This is easily done by securing the clamping member H to the floor. This member is of metal and preferably in the form of a channel bar which is secured, as in Figs. 10 and 11 to concrete floor I by means of depending expansion bolts 15. The bottom of the channel is provided with pairs of struck down ears 16 between which the furring strip A is placed and such ears are then struckup or clenched against the top flanges 2 of the strips A, as shown in Fig. 11. In Fig. 13, I show the clamping bars attached to the underside of a hollow tile floor J by means of toggle bolts 17.

What I desire to claim is:

1. A furring strip for the support of ceiling plates which consists of a box body having a flat top surface adapted to fit against a support, lateral flanges at either side of said top surface by means of which the strip may be secured to the support, and lateral flanges at the bottom of said box body upon which the edges of the ceiling plates rest.

2. A furring strip, for the support of ceiling plates provided with flanged edges, which consists of a box body having a flat top surface adapted to fit against a support, lateral flanges at either side of said top surface by means of which the strip may be secured to the support, and lateral flanges at the bottom of said box body upon which the edges of the ceiling plates rest, said last named flanges being adapted to be clenched up against the flanged edges of said ceiling plates.

3. A furring strip for the support of ceiling plates comprising a strip of metal bent up to form a box body having a flat top surface adapted to fit against a support, lateral flanges at either side of said surface by means of which the strip may be secured to the support, and lateral flanges at the bottom of said box body upon which the edges of the ceiling plates rest.

4. A furring strip, for the support of ceiling plates provided with flanged edges, comprising a strip of metal bent up to form a box body having a flat top surface adapted to fit against a support, lateral flanges at either side of said top surface by means of which the strip may be secured to the support, and lateral flanges at the bottom of said box body upon which the edges of the ceiling plates rest, said last named flanges being adapted to be clenched up against the flanged edges of said ceiling plates.

Signed at Pittsburgh, Pa., this 27th day of June, 1919.

LOUIS J. GRAFF.