No. 637,936. Patented Nov. 28, 1899.

A. KATZ.

MEANS FOR SECURING CEILINGS, FLOORINGS, &c., TO SOLID FLOORS.

(No Model.) (Application filed July 20, 1898.)

Fig. 1.

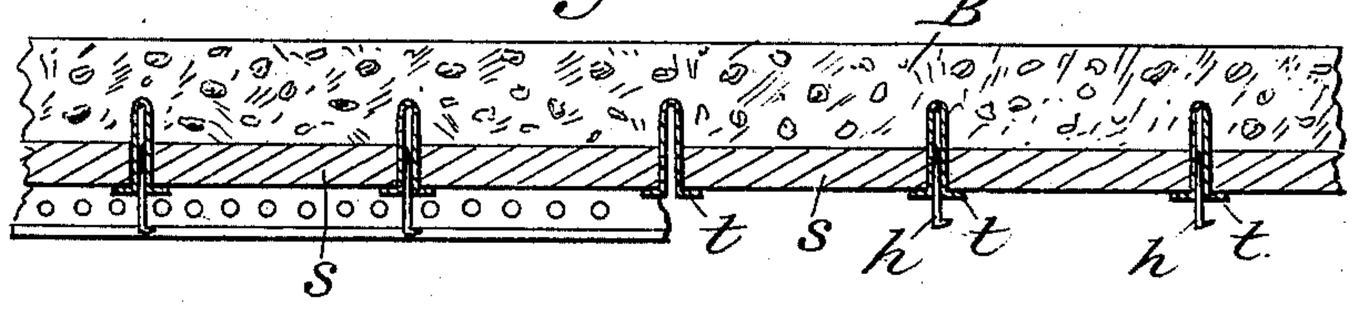

Fig. 2.

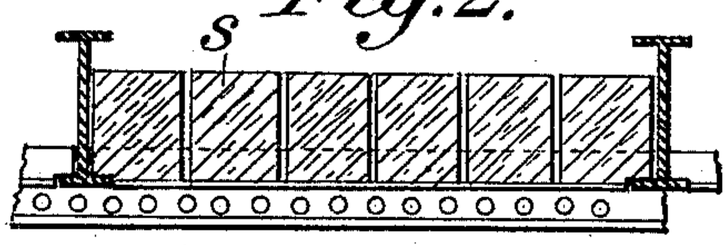

Fig. 3.

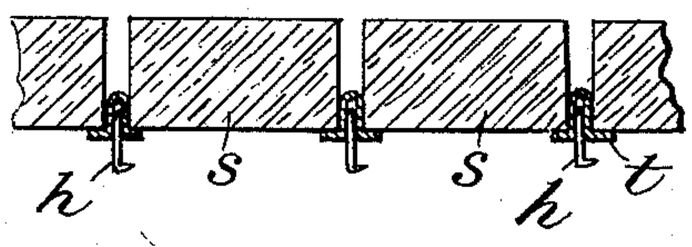

Fig. 4.

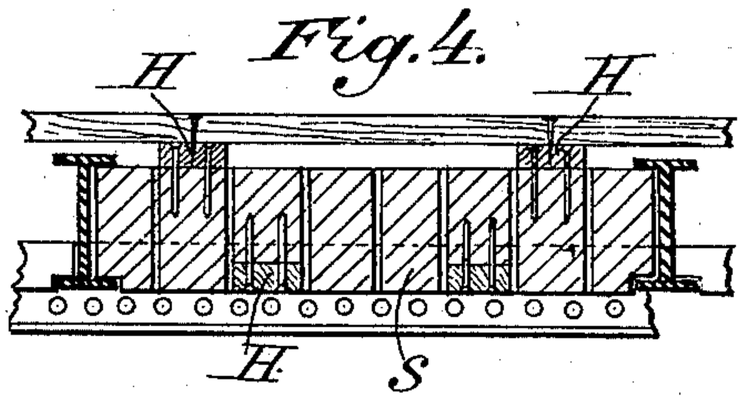

Fig. 5.

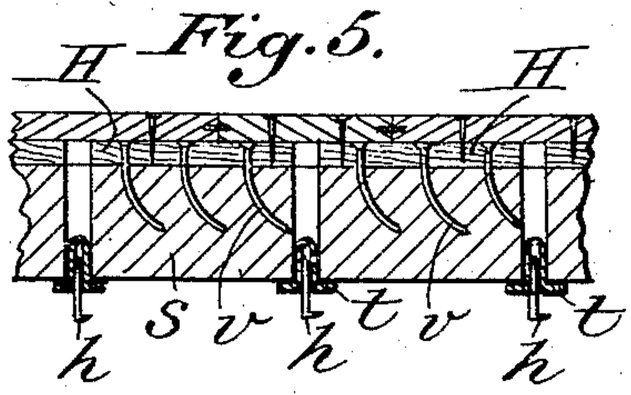

Fig. 6.

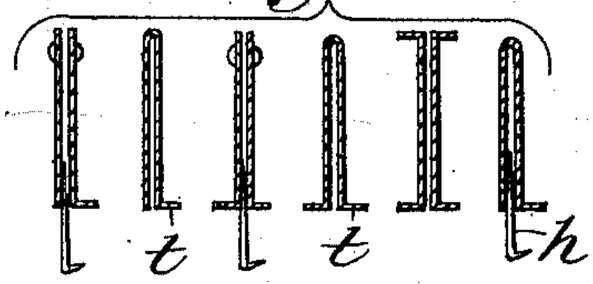

Fig. 7.

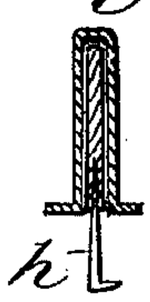

Fig. 8.

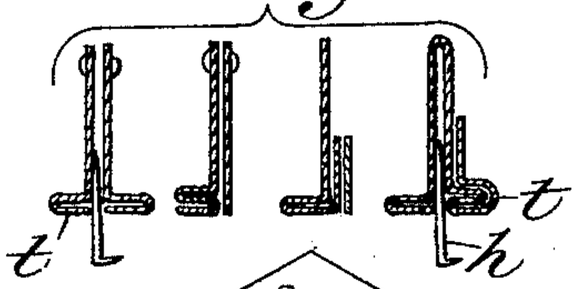

Fig. 9.

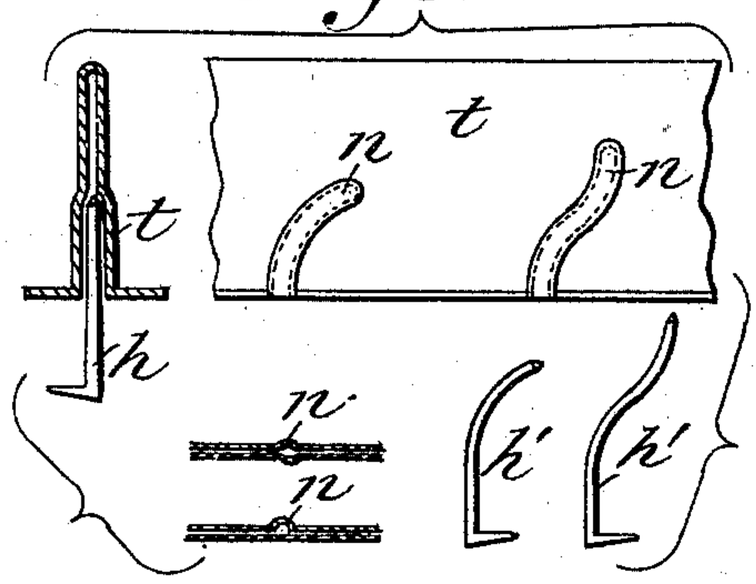

Fig. 10.

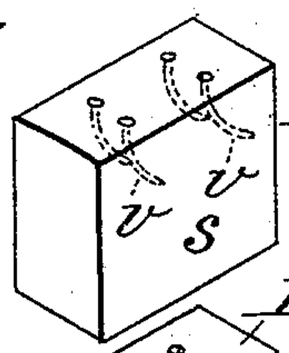

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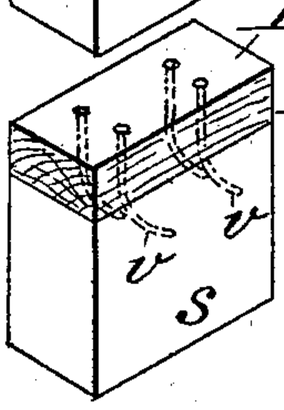
Fig. 11.



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Attorney

UNITED STATES PATENT OFFICE.

ADOLF KATZ, OF STUTTGART, GERMANY.

MEANS FOR SECURING CEILINGS, FLOORINGS, &c., TO SOLID FLOORS.

SPECIFICATION forming part of Letters Patent No. 637,936, dated November 28, 1899.

Application filed July 20, 1898. Serial No. 686,477. (No model.)

To all whom it may concern:

Be it known that I, ADOLF KATZ, a citizen of the Empire of Germany, residing at Stuttgart, in the Kingdom of Würtemberg, Germany, have invented certain new and useful Improvements in the Construction of Floors, Ceilings, and the Like; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The well-known vertical filling set between I-girders in solid floors, roofs, and similar structures has the drawback that the ceiling-plaster frequently cracks along the flanges of the girder and the mortar which adheres to the under sides of the flanges soon assumes another color to that of the remaining surface—that is to say, the ceiling shows more or less prominent stripes. In all such constructions a supplementary lining is necessary for making a ceiling-backing.

The present invention has for its object to dispense with the use of a supplementary lining for the ceiling and to provide an arrangement of girders for the support of the ceiling between the floor-girders, and also to provide for the support beneath the ceiling-girders of any preferred lathing or similar surface for the adherence of the plaster or other substance of which the ceiling may be formed.

Other objects will also more fully hereinafter appear.

In the accompanying drawings, Figure 1 is a transverse sectional view of a portion of a ceiling structure embodying my improvements in connection therewith. Fig. 2 is a similar view showing the floor-girders. Fig. 3 is a similar view to Fig. 2 minus the floor-girders and showing my improved ceiling-girders of the same form shown in Fig. 1, but of a different height or depth. Figs. 4 and 5 are also similar views showing the form of means employed for securing either the ceiling or floor, or both, to the filling-in blocks between the floor-girders. Figs. 6, 7, and 8 each represent views of the different transverse forms of which my improved ceiling-girders can be made. Figs. 9, 10, and 11 are detail views representing different modifications in the construction of the ceiling-girders and the means for securing the flooring to the filling-blocks.

The space to be covered is provided at suitable distances with sheet-metal supports or girders *t* of ⊥ L [sections, having two spring center fins, as shown in Fig. 1 of the accompanying drawings. The spaces resulting between the sheet-metal supports or girders *t* are covered in with tiles, artificial stones, plates, or the like *s*, and over these finally a suitably-thick layer of beton B is laid, as shown in Fig. 1. The filling-in material (stones, beton, or the like) between the sheet-metal supports or girders *t* absorbs any compression strains arising in the floor, roof, or dome, while the tension strains are carried by the sheet-metal girders or supports *t*. It is thus very easy to provide for both compression and tensional strains which may arise, as a suitable strengthening of the layer of stones or beton may be provided for the compression strains or a suitable thickening of the flanges of the girders *t* for the tension strains if they arise most strongly in the lowest layer of the material. For the latter purpose the cross-sections shown in Fig. 8 may be employed symmetrically or unsymmetrically and separately or in pairs. In a similar way this system of construction is also suitable for forming domes or roofs without the assistance of cradling or center scaffolding, the sheet-metal girders in this case being bent in the plane of the bar to correspond with the curve of the roof or dome. The sheet-metal girders or supports may also be constructed in a straight or bent form to suit any width of span, and more particularly for making ceilings between iron I-beams, as shown in Figs. 2 and 3. The ceiling-support (reed matting or the like) is attached to sheet-metal supports, the nails holding the ceiling-supports being driven in between the double center fin of the sheet-metal supports.

Fig. 6 shows a series of sheet-metal supports or grinders with double center fins, while Fig. 9 shows a similar sheet-metal support in which straight or curved guide-grooves *n* are impressed in one or both halves of the girder. In these grooves hooks are driven, which are thus forced to follow the form of the groove *n* and finally assume the form *h'*. It is evident that these hooks can

only be drawn out with great difficulty, because they owe their hold not alone to friction, but still more to an alteration of form.

Fig. 7 finally shows a sheet-metal girder having between the two fins an insertion of strips of wood or the like which are clamped in place and in which the nails may be driven.

Figs. 4 and 5 show an arrangement in which bricks or stones are employed which are provided with a facing of wood to admit of the ceiling-support and the flooring or the like being nailed thereto. As shown in Figs. 4, 5, 10, and 11, suitably-shaped straight or, if desired, curved recesses or holes *v* are impressed in the bricks or blocks *s* to serve as guides for the nails which are to be driven in. The nails when driven in bend and follow the curve of the hole, and thus afford a firm and certain hold. In this manner it is possible to make artificial stones, bricks, and the like of all kinds directly capable of being nailed to. Stones having these recesses or holes and with or without wooden facing nailed thereto may be employed for various objects. Fig. 10 shows such a brick or block without a wooden facing, and Fig. 11 such a one with a wooden facing Figs. 4 and 5 show the use of such blocks, bricks, or stones in a vertical filling, in which the ceiling carriers or supports may be nailed both to the sheet-metal supports and to the blocks. If some of the blocks be set with their wood facings uppermost. the flooring may be nailed thereon. A further use of these stones in lofty constructions is that they may serve as dowels for nailing thereto scaffolding, breastworks, wainscoting, door and window frames and coverings, and the like.

Instead of nailing on the wooden covering it may, for instance, in the case of bricks formed of cement, gypsum, and the like be directly inserted in the respective molds and attached to the material of the brick by means of nails, hooks, or other suitable dowels serving as a connection and previously driven in the wood.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In the construction of floors, ceilings, and the like, the combination of ceiling-girders constructed each of parallel fins or bodies formed with adjacent grooves having a curve, and means inserted between the fins and in the grooves for supporting a lathing or netting for the ceiling.

2. In the construction of floors, ceilings, and the like the combination of ceiling-girders constructed each of parallel fins or bodies formed with adjacent grooves of curved shape, and devices inserted within the grooves and provided with hook projections below the girders for supporting a lathing.

3. In the construction of floors, ceilings, and the like, the combination of ceiling-girders constructed each of parallel elastic fins or bodies formed with adjacent irregular-shaped grooves, and hooks driven into or between the fins at the grooves so as to assume the shape thereof and be thereby secured in place, said hooks adapted to hold or support a lathing or netting for the ceiling.

4. In the construction of floors, ceilings, and the like, the combination of ceiling-girders constructed each of a single strip of metal bent to form parallel fins or bodies, and provided with adjacent grooves, and devices inserted within the grooves and provided with projections below the girders for supporting a lathing.

5. In the construction of floors, ceilings, and the like the combination of ceiling-girders constructed each of a single strip of metal bent to form parallel fins or bodies, and provided with curved grooves, and hooks inserted within the grooves and projecting below the girders for supporting a lathing or netting for a ceiling.

In testimony whereof I affix my signature in presence of two witnesses.

ADOLF KATZ.

Witnesses:
AUGUST DRAUTZ,
H. WAGNER.