June 24, 1930. M. S. GOLDSMITH 1,767,067

CEILING PLATE

Filed Nov. 19, 1927

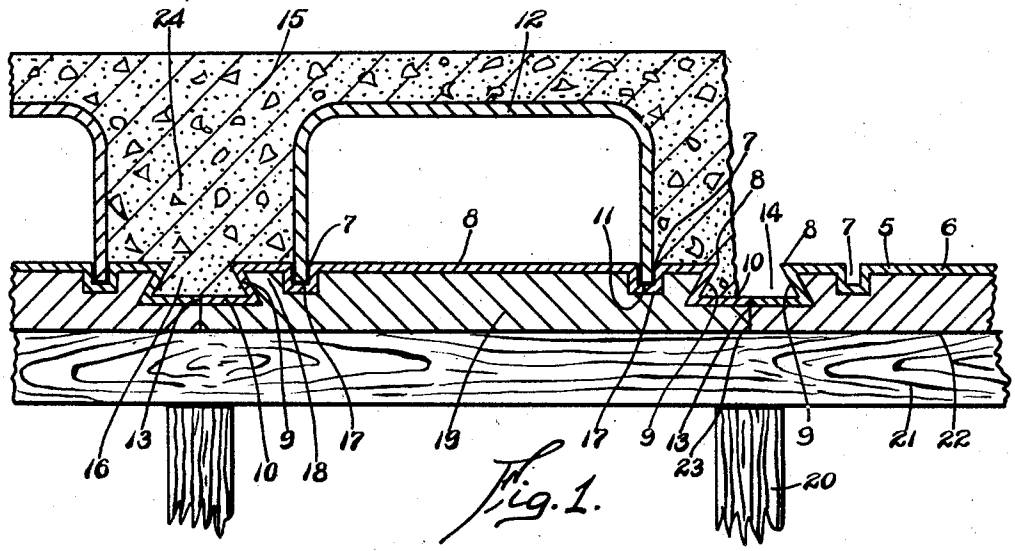


Fig. 1.

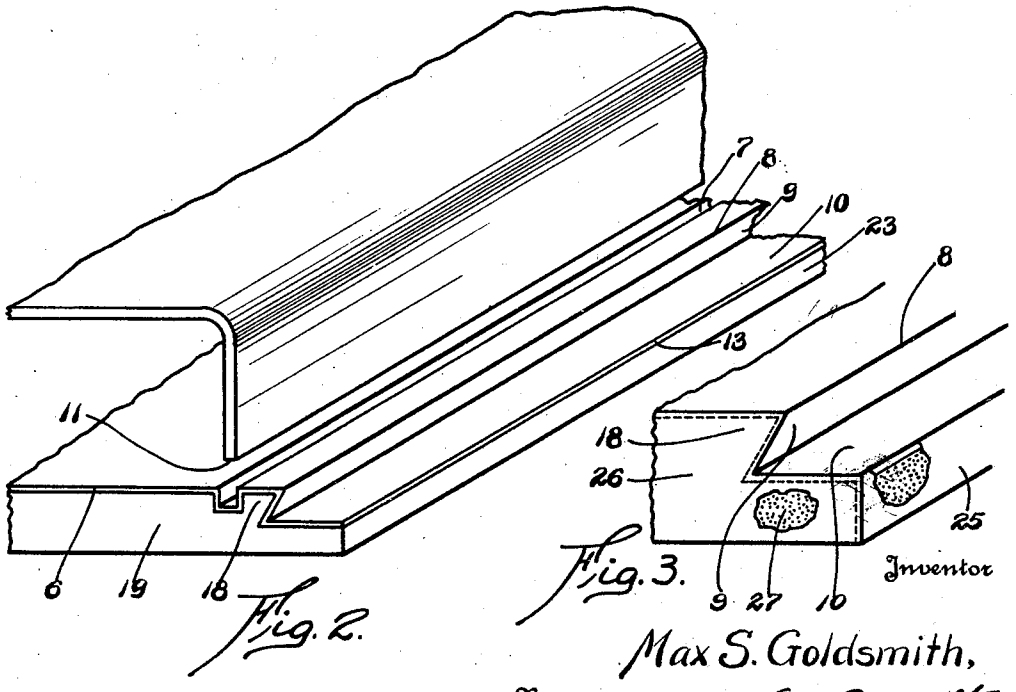


Fig. 2.

Fig. 3.

Inventor

Max S. Goldsmith,

By Murray and Regelter

Attorneys.

Patented June 24, 1930

1,767,067

UNITED STATES PATENT OFFICE

MAX S. GOLDSMITH, OF CINCINNATI, OHIO, ASSIGNOR TO THE GOLDSMITH METAL LATH COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO

CEILING PLATE

Application filed November 19, 1927. Serial No. 234,516.

This invention relates to floor and ceiling construction and has for an object the provision of nonfrangible ceiling plates which serve to protect pre-formed ceiling elements such as terra-cotta, gypsum, tile, cork, fibre and the like against breakage when used in connection with a plastic floor construction and which furthermore may serve as a mounting means for forms required to make such plastic floor of the hollow or air space type.

Another object is to provide a ceiling plate for the purposes stated which is adapted for invisibly locking ceiling slabs and the like thereto.

These and other objects are attained by the means described herein and disclosed in the accompanying drawings, in which:

Fig. 1 is a cross sectional view of a floor and ceiling structure having embodied therein the ceiling plates of the invention.

Fig. 2 is a fragmental perspective view of a plate of the invention, having a ceiling slab locked thereto and also having a metal form in position to be seated thereon.

Fig. 3 is a fragmental perspective view of a modified form of the device of the invention.

Heretofore much difficulty was experienced in constructing concrete floors with pre-formed ceiling elements because of the damage incurred by careless handling and breakage of said elements particularly at the top and abutting longitudinal edges. The preferred ceiling plate of the invention, indicated generally by reference character 5 comprises a single sheet of metal which is formed to provide a body portion 6, having substantially U-shaped longitudinal ways or grooves 7 spaced at a distance from the longitudinal edges of the body 6. An integral side wall 9 is inwardly inclined downwardly from each edge 8 of the body and has a longitudinal flange 10 extending therefrom in offset parallelism with the body 6. This provides an undercut portion adjacent each edge of the plate. From the foregoing and by reference to Fig. 1 it will be noted that the upper face of the ceiling plate is adapted to receive the bottom edges 11 of a metal form 12 in the ways or grooves 7 for positioning said forms. When a plurality of the plates are positioned, with the longitudinal edges 13 of flanges 10 in abutment, the inclined side walls and the flanges 10 of adjacent plates provide a dove-tailed way 14 for receiving a portion of a poured concrete or plastic mass 15. That portion of the concrete or plastic mass 15 which enters the way 14 serves to provide an integral concrete key 16 for locking the plates 5 to the mass 15.

The bottom face of the ceiling plate 5 presents a pair of spaced ribs 17 formed by the side walls and bottom of the ways 7. Adjacent the edge of the ribs 17 is a dove-tailed way 18 formed between one side wall of the groove 7 and the adjacent inclined side wall 9 of the plate.

The top 6, inclined side 9 and flange 10 form a substantially Z-shaped portion which forms the under-cut way 14 in the top face of the unit and the complementary undercut way 18 in the bottom face of said unit. The composition material of the slabs 19 may be placed in a plastic state or formed by pressure on the bottom face of the ceiling plates 5 when they serve as molds for the slabs 19.

In erecting a floor and ceiling the customary shoring 20 and stringers 21 are employed as a temporary supporting structure and the plates 5 carrying the ceiling slabs 19 are then positioned with the flat bottom faces 22 of slabs 19 resting upon the stringers 21. The side edges 23 of slabs 19 and the edges 13 of the ceiling plates 5 are placed in abutment with corresponding edges of adjacent units whereupon a strong flat structure is provided whereon the workmen may stand while mounting the metal forms 12 in the grooves 7. The ceiling plates, being factory made are uniform and subject to ready and accurate alignment so that the ordinary unskilled workman may position the metal forms 12 in perfect alignment in a minimum of time. The concrete or plastic floor mass is then poured over the tiles and fills the spaces between the side walls of adjacent tiles for providing con-

crete beams 24 and the integral concrete keys 16. Upon hardening of the concrete or plastic mass 15 the temporary supporting structure is removed. The side walls of the metal forms 12 are securely retained against lateral displacement by the side walls of the top grooves 7 so that uniform straight line beams 24 are produced. The plates 5 are securely locked to the bottom of the beams 24 by the integral concrete keys 16 and the ceiling slabs are suspended from the bottom faces of the plates by reason of their keyed engagement with said plates.

In the modified form of the device of the invention shown in Fig. 3, depending flanges 25 are provided along the longitudinal sides of the plate and an end wall 26 is used to close the opposite ends of said plate. This modified form is especially adapted for protecting the end of the breakable element of the ceiling plate should that be necessary or desirable. This modified form is employed in floor construction in the manner previously explained.

It will be noted that the metal or non-frangible covering on the ceiling plates of this invention becomes an integral part of the ceiling plate and the metal or non-frangible covering serves as a mold to hold and firmly lock the pre-formed or frangible ceiling slabs 19 in position and at the same time protect the same against breakage during handling and mounting, and also materially reduces the labor and expense incident to constructing a concrete or plaster floor. The bottom or exposed faces 22 of the ceiling slabs 19 may be suitably prepared for receiving the desired finishing or decoration immediately after the temporary supporting structure is removed from beneath a floor.

While the plates are preferably made of sheet metal, any non-frangible sheet material such as sheet fiber may be used for the purpose of protecting the terra cotta, tile or similar slabs against breakage.

What is claimed is

1. As a new article of manufacture a non-frangible ceiling plate formed with grooves on opposite faces thereof, the grooves on one face being adapted to be filled with a plastic or pliable mass whereby to suspend the plate and a slab of cementitious and fire-proof material carried by the grooves in the other face of the plate and reinforced against breakage thereby.

2. As a new article of manufacture a non-frangible faced pre-formed ceiling slab, said non-frangible facing having undercut grooves therein whereby it may be suspended from a plastic floor mass.

3. As a new article of manufacture a pre-formed ceiling slab having integral keys on the top face thereof, and a sheet metal or non-frangible plate conforming to the top face of said slab for locking the plate and slab together, the corresponding keys on the metal plate serving to lock the plate to the bottom face of a plastic floor mass.

4. In a floor and ceiling structure the combination of pre-formed ceiling slabs, temporary supporting means for said slabs, metal or non-frangible plates having interlocked engagement with the top faces of said slabs, said plates having undercut top portions and a poured floor mass disposed on top of the plates and extending beneath the undercut portions of the plates, said mass being adapted to harden for locking the plates to the floor.

5. In a ceiling plate the combination of a sheet metal or non-frangible body portion one face of which has a pair of spaced ways therein, undercut portions disposed on opposite sides of said ways and a pre-formed body of material of a cementitious fire-proof nature secured on the opposite face of the plate.

6. In a ceiling slab for mounting on the bottom face of a concrete floor, the combination of a non-frangible plate having a longitudinal Z-shaped bend therein for providing an undercut way in the upper face of said sheet and a complementary undercut way in the bottom face, and a cementitious body permanently secured to said bottom face, said plate and body forming a prepared construction unit.

7. As a new article of manufacture a pre-formed cementitious ceiling slab having integral keys on the top face thereof, and a non-frangible plate conforming to the top face of said slab for locking the slab and plate together, the corresponding keys on the plate being adapted to be embedded in a plastic mass whereby the slab and plate are locked to the plastic mass.

8. In a floor and ceiling structure the combination of pre-cast or pre-formed ceiling slabs, temporary supporting means for said slabs, non-frangible plates having interlocked engagement with the top faces of the slabs, said plates having undercut portions, and a poured floor mass disposed over the plates and extending into the undercut portions thereof whereby said mass upon hardening serves to lock the plates to the floor.

9. As a new article of manufacture a ceiling slab comprising a mold forming sheet of non-frangible material provided with interiorly and exteriorly disposed undercut grooves, a fire-proof plastic substance filling the mold and retained therein by entry into the interiorly disposed undercut ways, the exteriorly disposed undercut ways serving to receive a poured floor mass for suspending the mold slabs from said mass.

10. As a new article of manufacture a fire-proof cementitious ceiling slab having a permanently attached top protective cov-

ering of non-frangible material, the facing being grooved for interlocking with the plate and having exterior grooves whereby it may interlock with a poured plastic mass on top of the facing.

In testimony whereof, I have hereunto subscribed my name this 16th day of November, 1927.

MAX S. GOLDSMITH.