March 12, 1929. E. SCHOU 1,704,954

SEEPAGE PROTECTOR FOR BUILDING WALLS

Filed Feb. 20, 1928

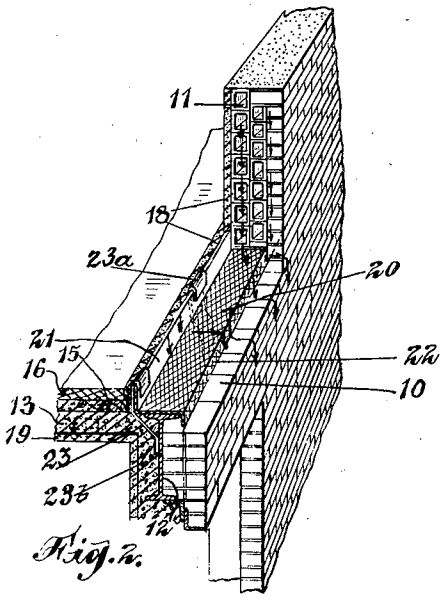


Fig. 2.

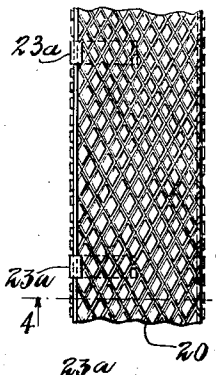


Fig. 3.

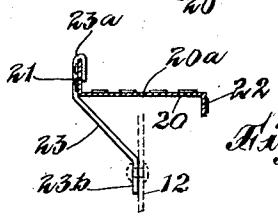


Fig. 4.

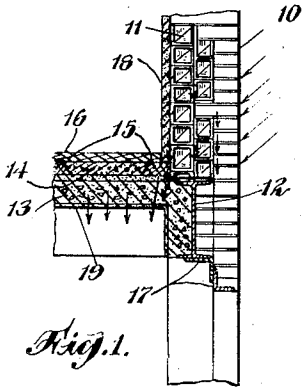


Fig. 1.

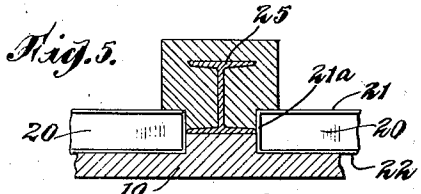


Fig. 5.

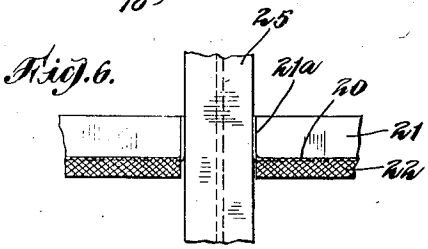


Fig. 6.

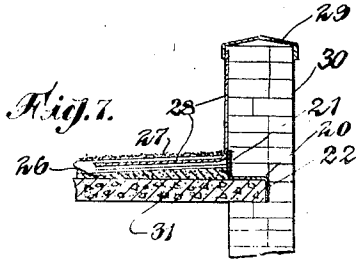


Fig. 7.

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UNITED STATES PATENT OFFICE.

EUGENE SCHOU, OF BROOKLYN, NEW YORK, ASSIGNOR TO ERLING WINSNES, OF NEW YORK, N. Y.

SEEPAGE PROTECTOR FOR BUILDING WALLS.

Application filed February 20, 1928. Serial No. 255,836.

This invention relates to improvements in building construction and more particularly to means for the protection of floors and ceilings in dwellings and other buildings of fire proof construction against moisture entering through outside walls into the floor construction and damaging the same.

It is the object of the invention to provide effective means for collecting the seepage of water at every floor level and diverting the same to the outside of the building.

It is another object of the invention to construct the protective means in such a manner that a reliable bond is obtained with the surrounding brick work and other building material and that these means are of simple design and easily erected in the building walls.

With these and other objects in view which will appear more clearly as the description progresses, the invention consists of a protector plate of special design and means for securing the same in building walls.

In the accompanying drawings which form a material part of this disclosure:

Fig. 1 is a vertical section through a portion of an exterior wall in a building of steel skeleton construction which is not provided with my seepage protector, to illustrate the flow of seepage in a wall of this type.

Fig. 2 is a perspective detail view of a wall and part of a floor adjacent thereto provided with my seepage protector.

Fig. 3 is a plan view of my seepage protector plate before its erection in a building wall.

Fig. 4 is a sectional elevation on line 4—4 of Fig. 3.

Fig. 5 is a detail sectional plan illustrating the manner of erecting my protector plates at a column of a building.

Fig. 6 is a front elevation of Fig. 5 from which the brick work is omitted.

Fig. 7 is a vertical section through the parapet wall and roof of a building showing the application of my seepage protector.

Fig. 1 of the drawings illustrates a common method in a skeleton steel building construction which consists of an exterior wall comprising a combination of four inch exterior brick 10 backed up with hollow "backer tile" 11. An I beam 12 carries the weight of the wall and of the floor slab 13 which is here illustrated as consisting of a concrete slab 13 covered by a cinder concrete fill 14 in which nailing strips 15 are imbedded and which carry the wooden floor 16. The lower flange of the I beam 12 is provided with two angle bars 17 riveted to each other for supporting the front portion of the wall thereon. The interior face of the wall is protected by a plaster furring 18. In walls of this kind particularly, but also in walls which are built of solid brick a serious condition arises through seepage of water through the joints of the outer bricks and through the body part of the wall into the interior of the building at the plane where the wall is supported on the steel I beam 12. The path of the seepage is illustrated by arrows in Fig. 1. It will be seen that the seepage of water supplied by rain beating against the face of the wall enters through the joints between front bricks 10 passes partly downward on the face of terra-cotta blocks 11 and partly through the pores of these blocks to the top surface of I beam 12 and horizontally into the cinder concrete fill 15 from where it seeps through concrete slab 13 and the plaster ceilings 19 into the room below. In many cases through shrinkage of materials or vibrations which will cause open or loose joints this condition will be enhanced giving an easy access for rain water to enter the interior of the building and damage to ceilings and plaster is of frequent occurrence. A membrane waterproofing has often been used to alleviate this condition but the very object of obtaining a solid bond between the various materials is not accomplished thereby. The same conditions exist praticularly in parapet walls on the roof of a building. These parapets are subject to wind pressure and to driving rain from both sides and it is of particular importance to have the materials perfectly bonded at the line where the roof slab 31 joins the parapet wall 30 of a building as shown in Fig. 7.

To remedy these defects I have invented the construction shown in Fig. 2. While the building construction is shown to be the same as that of Fig. 1 it will be seen that on the upper flange of I beam 12 rests a protector plate 20 preferably made from rolled steel and having faces of 20^a, 21 and 22 checkered, corrugated or roughened in any suitable manner, so as to provide a good bond with cement mortar or concrete. This protector plate is shown in detail in Figs. 3 and 4 its cross-section has the shape of a Z lying flat on its web. The horizontal body part 20^a is placed

upon the top flange of I beam 12 as shown in Fig. 2 placing the upwardly extending flange 21 towards the interior face of the wall and reaching preferably above the adjacent floor level. The downwardly extending flange covers the front edge of the top flange of I beam 12 and is covered on its outside by the face bricks 10. Brackets 23 preferably bent of flat steel bars hold the protector plates in desired position on I beam 12. These bars are bent U shape in their upper portion at 23^a to embrace flange 21 of the protector plate. The middle portion 23 extends angularly towards the web of I beam 12 and the lower portion 23^b is bent parallel to the web and riveted thereto. These protector plates extend the full length of each bay of the building between columns. Figs. 5 and 6 illustrate how flange 21 is bent forward at 21^a to lean against the vertical edge of the flange of a column 25.

At parapet walls for protection of roof slabs the protector plate is applied as shown in Fig. 7 where its application is illustrated for a solid brick wall without steel skeleton construction. The stone concrete roof of slab 31 extends preferably to the front layer of bricks 30 and that portion of it which is embedded in the wall is covered by the protector plate 20. The roof slab 31 is further covered by a cinder concrete fill 26 which provides the slope of the roof and this is further covered by the usual tar, felt and slag covering 27. Between the roof covering 27 and concrete 26 a copper flashing 28 is usually provided along the back of the parapet wall, preferably extending upward into coping 29 which covers the top of the wall.

The flange 21 of the protector plate 20 extends above the upper surface of the cinder concrete and is covered by copper flashing 28. By introducing my protector plate into the wall construction in the above described manner the flange 21 serves as a dam preventing any water, drips or seepage from above the protector plate which flows along the face of the terracotta work or through the same, to enter the floor slab or the interior of the building. The outer turned down flange 22 prevents water from entering between plate 20 and the top flange of I beam 12. All seepage which is intercepted by the protector plate is carried towards the front of the wall where it finds its way to the outside thereof through joints, or will eventually dry out by the greater evaporation at the face of the wall. The roughened or corrugated faces of the plate 20 are left unpainted to bond readily with concrete or cement mortar which protects them while the usually painted upper face of the I beam flange 10 does not form a bond and seepage passes easily through the minute space between mortar and beam. The manner of fastening of the protector plate by means of straps or brackets 23 has the advantage that no holes are provided in the plate 20 through which water may seep to the brick work below. The fastening of the straps 23 to the I beam-web is a very simple one and the flexibility of the straps facilitates adjustment of plates 20 to lie flat and close fitting on the upper flange of I beam 12.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. The combination with a vertical brick wall of a building having a floor joined thereto between two stories of said building, of a preformed structural steel member enclosed within built into said wall substantially at the plane of said floor, said member consisting of a plate extending horizontally from a vertical plane near the interior side of said wall to a plane near the exterior side of said wall, a vertical baffle flange extending upwardly at the inner line of said plate to a level above said floor and a downwardly extending baffle flange at the outer line of said plate.

2. The combination with a vertical brick wall of a building having a floor joined thereto at its interior side, of a seepage protector forming a part of said wall substantially at the plane of said floor and extending longitudinally within said wall, said protector consisting of a preformed plate having an upwardly extending flange forming a baffle close to the inner face of said wall and a downwardly extending flange on said plate adapted to deflect water from said plate downwards behind the exterior bricks of said wall.

3. The combination with the vertical wall of a building having a floor joined thereto of a seepage protector forming a part of said wall at the plane of said floor extending longitudinally thereof and consisting of a rigid plate of rolled metal having a horizontal web and a pair of vertical flanges thereon, one of said flanges extending upwardly near the inner face of said wall from a plane below the level of said floor to a plane above the level of said floor forming a baffle against the discharge of water from said plate the second flange extending downwardly from said web near the outer face of said wall and forming means to discharge water from said web downwardly within said wall.

4. The combination with the curtain wall of a building of steel skeleton construction having columns and an I beam joining said columns at a floor, said beam forming means for supporting said wall and the floor adjacent thereto, a metallic plate within said wall resting on said I beam and extending longitudinally upon the same, flanges on said plate near the inner and outer faces of said wall, the inner flange extending upwardly from a plane below the top face of said floor to a plane above said floor and the outer

flange extending downwardly covering the outer edge of the top flange of said I beam.

5. In a building of steel skeleton construction having columns and a spandrel beam joining said columns at a floor of said building a wall and a floor slab supported by said I beam between said columns, a metallic plate concealed within said wall on the top flange of said I beam and extending longitudinally thereof abutting against said columns, flanges on said plate near the inner and outer faces of said wall, the inner flange extending upwardly from the upper plane of said spandrel beam to the upper plane of said floor slab and the outer flange extending downwardly from said plate, forming a shield for said beam by covering the outer edge of the top flange of said I beam.

6. In combination with a wall of a building having a floor joined to the interior side thereof and having a veneered external surface, of a seepage protector built into said wall and comprising a metallic plate extending longitudinally of the edge of said floor and disposed substantially in the plane thereof, said plate having integral baffle flanges at its longitudinal edges extending above and below said plane and disposed respectively adjacent to said floor and to the veneer.

7. In combination with a wall of a building having a floor joined to the interior side thereof and having a veneered external surface, of a seepage protector built into said wall and comprising a metallic plate extending longitudinally of the edge of said floor and disposed substantially in the plane thereof, said plate having integral baffle flanges at its longitudinal edges extending above and below said plane and disposed respectively adjacent to said floor and to the veneer and said protector having end walls extending outwardly away from the upwardly extending flange thereof.

8. An article of manufacture comprising a seepage protector adapted for embedment into a building wall between its opposite faces and consisting of a rigid metallic plate having preformed integral baffle flanges extending perpendicularly therefrom downward along one longitudinal edge and upward along the opposite edge thereof, the upper face of said plate forming a plane for the discharge of seepage transversely from the inner face of said upturned flange to the outer face of said downturned flange.

9. An article of manufacture comprising a seepage protector adapted for embedment into the spandrel wall of a steel skeleton building and for fastening to the beams and columns supporting said wall, said protector consisting of a rectangular elongated and rigid steel plate having preformed integral baffle flanges extending downward therefrom along one longitudinal edge and upward therefrom along the opposite edge and transverse end flanges on said plate adapting it for fastening to the steel columns of a skeleton building.

In testimony whereof, I have signed my name to this specification this 15th day of February, 1928.

EUGENE SCHOU.