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P. H. JACKSON.

WATERPROOF SIDEWALK, FLOOR, OR ROOF CONSTRUCTION.

(Application filed Jan. 18, 1899.)

(No Model.)

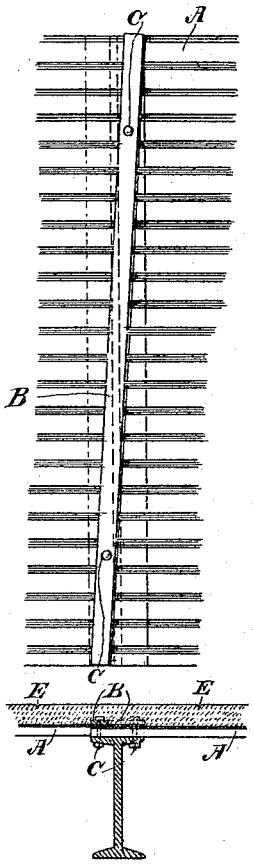


Fig. 1.

Fig. 2.

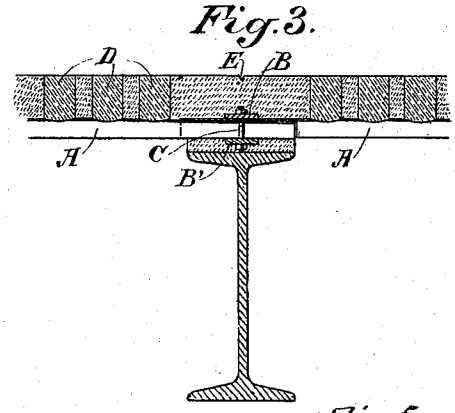


Fig. 3.

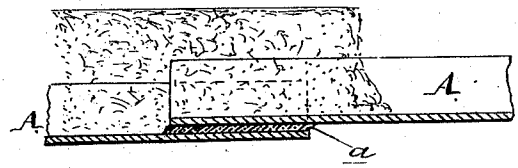
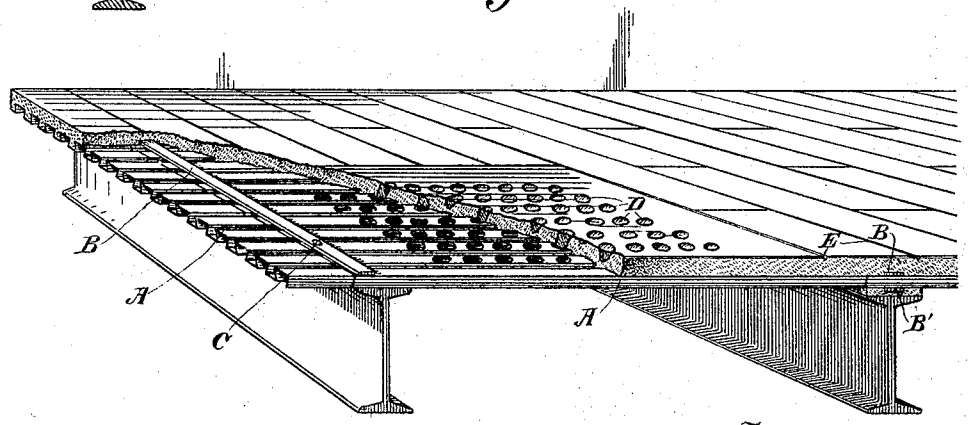


Fig. 5.

Fig. 4.



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UNITED STATES PATENT OFFICE.

PETER H. JACKSON, OF SAN FRANCISCO, CALIFORNIA.

WATERPROOF SIDEWALK, FLOOR, OR ROOF CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 638,870, dated December 12, 1899.

Application filed January 18, 1899. Serial No. 702,604. (No model.)

To all whom it may concern:

Be it known that I, PETER H. JACKSON, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Waterproof Sidewalk, Floor, or Roof Construction; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an improvement in sidewalks, sidewalk-lights, floors, floor-lights, roofs, roof-lights and the like, which are made with corrugated metal bottoms, and upon which bottom is formed in a plastic state a superposed thickness of concrete or artificial stone, or both, which cements to the metal and becomes essentially integral with it.

The invention consists in a means hereinafter described and claimed for providing for expansion and contraction of the parts and preventing leakage thereof. These constructions as generally made are subject to slight expansion and contraction due to atmospheric changes operating upon their materials and more so upon the upper surfaces of the artificial stone where it is exposed to the sun's rays, so that in places cracks will be opened and seams between the parts and also in the weaker solid portion unless provision is made for it.

The object of my present invention is to prevent any water that may leak through the superposed artificial stone or concrete from passing through the metal bottom, and, as these superposed materials are of a hydraulic nature, absorb wet or moisture that might be retained on the corrugated metal bottom.

Referring to the accompanying drawings, Figure 1 is a plan view of the top of corrugated metal at the place of lap, showing the clamping-bar in its position. Fig. 2 is a vertical section of Fig. 1. Fig. 3 is a similar view showing the arrangement with two clamping-bars in connection with glass lenses. Fig. 4 is a perspective view of a portion of a sidewalk, floor, or roof, showing my improvements. Fig. 5 is an enlarged sectional view showing the cementing material between interlocking ends of the plates.

The metal sheets or plates A are corrugated, the corrugations being either dovetailed, rectangular or trapezoidal in form, and these corrugations extend into and overlap each other at points where the plates meet, the lap usually amounting to from two and one-half to five inches. The corrugations are usually not very close fitting, and in order to press them together and form a comparatively tight joint I employ a stiff bar of metal B, which extends over the lap transversely to the corrugations, and through this bar at considerable distances apart tightening-bolts C extend and passing through the lapping sheets may be secured by passing through holes drilled through the beam or other support on which they rest. This bar acts as a straight-edge and forces the sheets A evenly down, at the same time locking them upon the level bed upon which they rest, as is clearly shown in Fig. 2. It is imperatively necessary that the top surface of the metal should be flat and level, particularly where holes are formed in the flat upper surface between the corrugations and these holes blocked with glass lenses D, the artificial stone mixture being filled in between the lenses, the whole forming sidewalk, floor, or roof lights, as the case may be. As the glass is of even thickness they must rest on a level bed. If the bed be uneven, the tops of the glass will also be uneven and the structure will be objectionable and unsatisfactory. By the use of the bars or straight-edges, I am enabled to clamp and secure these meeting and overlapping ends without the expensive and prohibitory method of boring and tapping the underlying beam at each corrugation.

As shown in Fig. 1, the bar B extends in line above the I-beam flanges and may, if desired, extend a little diagonally, so that one bolt will pass through the flange on one side of the vertical web of the beam, while the bolt at the opposite end may pass through the opposite flange, and when these bolts are screwed down the whole width of the corrugated surfaces will be firmly clamped together.

Should the steel beam or base on which the corrugated metal sheets A with their lapping ends rest be too low, which is often the case,

the beam is built up with Portland-cement mixture to the right height, and as it is difficult to drill through the cement and beam I have shown in Fig. 3 a construction where I employ a second bar of metal B', which extends below and in the same direction with the upper bar B, the lapping corrugated ends of the sheets being clamped and locked between the two, the bolts extending through them, as before described, at long distances apart, with nuts or keys which when tightened force the corrugated lapping sheets together and retain them level. This construction does away with drilling of the beams and reduces the expense. If the corrugated ends do not fit closely at the place of the lap, I smear over the sheets where the lap is to be made thin cementing material *a*, which is preferably elastic. Then the corrugations are spread apart at that place and the ends are forced together to overlap, and when the pressure is applied by screwing down the bars, as previously described, the cement completely fills all the space between, any surplus squeezing out at the ends. This permits of expansion and contraction without causing leaks at these joints.

The heat of the sun and the variation in the atmosphere often produced cracks in the artificial stone which forms the top surface, and especially where no glass is used this expansion and contraction will frequently form disfiguring cracks in the surface. The changes in temperature, however, no not extend very deeply into the cement material on account of its non-conducting quality, and these surface cracks do not materially impair the strength of the material, but are only disfiguring in appearance. In order to overcome this difficulty, I lay off the top finished surface in small squares, making grooves or channels E on the lines of these divisions of considerable depth—say three-eighths of an inch. This allows the surface of each of the squares to expand and contract independent of the neighboring squares and largely or entirely prevents the cracks above referred to. The surface portion, as before stated, being more influenced by the expansion and contraction than that which is deeper down, the channels allow of this expansion without producing the cracks.

The material which forms the covering of artificial stone is made of considerable thickness, and experimental tests have shown that the slight weakening arising from the deep grooves or channels to prevent the surface cracking is not sufficient to affect the strength, which is many times greater than the requirements.

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

1. A sidewalk, roof, floor, and like structure having a base formed of corrugated metal plates overlapped and interlocking at the ends, in combination with a supporting-beam and a metal bar extending parallel therewith, and means whereby the bar is secured to the beam and clamped across the overlapping ends of the sheets.

2. In a sidewalk, roof, floor, or like structure having a base formed of corrugated metal plates or sheets, the ends of which overlap and interlock, a metal bar extending across the overlapping ends, screw-bolts extending through the bar and the lapped metal plates and through the beam or like support upon which they rest and nuts or keys engaging the ends of the bolts adapted to clamp the bar upon the plates as described.

3. A sidewalk, roof, floor, or like construction consisting of a base formed of corrugated overlapping interlocking metal plates, metal bars extending transversely across the overlapping ends and bolts extending through the bars and plates and the beams or like supports beneath whereby the plates are clamped together and a superstructure of artificial stone or cement filling the corrugations and embedding the bars.

4. A sidewalk, roof, floor, or like structure formed of corrugated metal sheets or plates, with interlocking overlapping ends, metal bars extending above and below transversely across the interlocking ends, bolts passing through said bars and the interposed plates and nuts or keys by which the bars are clamped upon opposite sides of the plates and a superposed surface of artificial stone or concrete.

5. A sidewalk, roof, floor, or like structure formed of corrugated metal sheets or plates with the ends extending into and interlocking with each other, a cementing material introduced between said interlocking ends, one or more metal bars extending transversely across the interlocking ends and means for clamping said bars and forcing the interlocking surfaces into contact with each other, and a superposed surface of artificial stone or concrete.

6. A sidewalk, floor, roof, or like structure formed with a base of corrugated metal sheets, a support for the ends, and a clamping medium extending substantially parallel with the support whereby the ends of the sheets are interlocked and pressed together.

7. A sidewalk, floor, roof, or like structure comprising a dovetailed or corrugated bottom of overlapping metal sheets with clamping-bars and a top of concrete filling adherent to the channeled bottom and bars, said top having its upper surface only, transversely subdivided by deep grooves whereby said surface sections are expansible and contractible independent of the bottom and the metal support.

8. The combination in a sidewalk, floor, roof, or the like, of a metallic base formed of

channeled metal overlapping sheets with supporting-beams and clamping-bars crossing the overlapping ends of the sheets, and a top of concrete tamped into the channels of the bottom sheets, the upper surface only of the concrete top formed with deep intersecting grooves.

In witness whereof I have hereunto set my hand.

PETER H. JACKSON.

Witnesses:
HARRY J. LASK,
CHAS. J. MCCATHY.