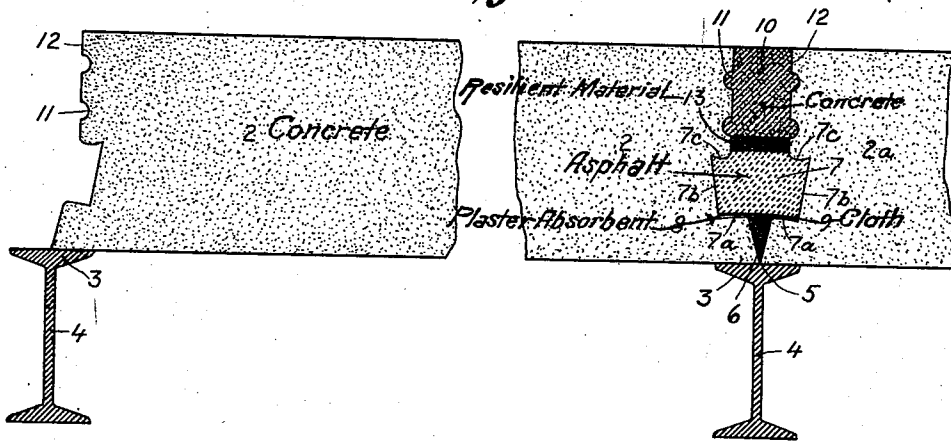


J. G. ZWICKER.  
 CONCRETE FLOORING CONSTRUCTION.  
 APPLICATION FILED JULY 9, 1910.

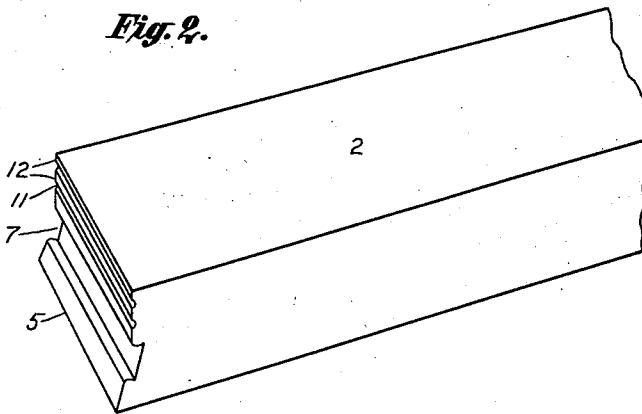
1,007,624.

Patented Oct. 31, 1911.

*Fig. 1.*



*Fig. 2.*



WITNESSES  
*E. Schuch*  
*Edwardo Romero*

INVENTOR  
*Julius G. Zwick*  
 per *Chas. H. Grammonte*  
 ATTORNEY

# UNITED STATES PATENT OFFICE.

JULIUS G. ZWICKER, OF MEXICO, MEXICO.

CONCRETE FLOORING CONSTRUCTION.

1,007,624.

Specification of Letters Patent.

Patented Oct. 31, 1911.

Application filed July 9, 1910. Serial No. 571,232.

*To all whom it may concern:*

Be it known that I, JULIUS GOTLOB ZWICKER, citizen of the United States, residing at No. 102 Paseo de la Reforma, city of Mexico, Mexico, have invented certain new and useful Improvements in Concrete Flooring Construction, of which the following is a specification.

My invention relates to means for making a water tight joint between the opposite ends of two floor members the ends of which rest on top of the upper flange of the supporting beam. In making such joints the meeting floor member ends are commonly brought into abutment, the crack or slit shaped aperture between the two ends being filled with cement, calked with oakum covered with cement or concrete or closed by other obturating means of many different kinds.

In the present invention a sufficient space is left between the meeting ends of each pair of floor members to receive an ample and sufficient body of waterproofing material, the upper part of which is made of concrete, so as to form a continuous surface of homogeneous material.

I am aware that it is not new to proportion the length of flooring members with respect to the width of span so that the opposite ends of any pair shall not abut against one another, thus leaving a sufficient space between them to form together with the upper surface of the top flange of the supporting beam common to both ends, a receptacle of the shape of a rectangular prism, for holding the jointing material. It is new, however, to give the ends an outline or shape so as to form on each side of the joint, a series of pockets adapted to retain the jointing material in place by forming laterally projecting anchors on the jointing materials which are in a plastic state when introduced into place. When these jointing materials have become solidified by drying, the projecting anchors fitting snugly in the respective recesses or niches which served to mold them, hold the obturators in their proper position, providing absolute water tightness. At the same time a stratum of resilient material, horizontally disposed, is provided to take up any movements or tendency to displace the packing material in a vertical direction, thereby marring the continuity of the floor surface.

To recapitulate; the invention consists: first, of giving the ends of the flooring mem-

bers a shape forming a plurality of retaining niches or recesses; secondly, of the choice and disposition of jointing materials run into said recesses in a plastic condition, and there molding them into a plurality of suitably shaped anchoring projections, integral with the body of the particular stratum of jointing material to which each belongs; thirdly, of combining above new dispositions with the known arrangement of having the meeting ends of a pair of flooring members spaced far enough apart to provide a sufficient space for the reception of a body of jointing material of ample dimensions; and finally, the invention provides a stratum of resilient material for taking up vertical movements on the part of the inserted packing. From the above it is evident that the value of these water-proofing dispositions for flooring members is very much increased when the same form of construction is applied to roofing, for which it is eminently well adapted. To obtain these results I use the shapes of floor member ends, and the disposition of materials illustrated in the accompanying drawing in which:

Figure 1 is a vertical longitudinal section of the meeting ends of a pair of flooring members and of the joint between said ends, and Fig. 2 is a perspective view of the face of one of these ends, showing a part of the member.

The meeting ends 2 and 2<sup>a</sup> of the pair of floor members shown in Fig. 1, resting on upper flange 3 of supporting beam 4, abut against each other along the line 5, at the bottom of the joint. Considering the shape of the receptacle formed by the space between the two ends 2 and 2<sup>a</sup>, the meeting point 5 forms the apex of a prism having an isosceles triangle 6 for its base. In making the joint, after the two ends have been brought into abutment along line 5 and the flooring members have been secured in place, space 6 is filled with an appropriate filling material which should be of an absorbent nature. Although water will probably not penetrate as far as this wedge-shaped space, owing to the impermeable nature of the strata of jointing material placed above it, some may seep through, besides which the drippings or exudations from the asphalt body in the next space above may leak through the interposed cloth placed at the bottom of that body. The absorbent material filling the space underneath is intended

to take up all such tricklings and leakages, preventing their reaching the sides of the supporting beam, and dripping down to the ceiling below. I prefer to use common plaster of Paris for filling space 6, as it can readily be poured in a liquid state and hardens quickly, while it permits any superfluous plastic material to be readily removed as the joint is made. The space 7 above the plaster of Paris is a prism of a special form not corresponding to any regular geometrical figure. The base is formed by the curves 7<sup>a</sup>, 7<sup>b</sup>, symmetrical in both member-ends, extending well outward, away from the vertical median line of the joint, and curving slightly downward from the base angles of the inverted triangle 6, each side 7<sup>b</sup>, slopes outwardly and upwardly, forming an acute angle at the point of meeting the upper side 7<sup>c</sup> of the section which slopes with a slight downward inclination toward said median line but stops well short of it, running into the lower end of corresponding side-wall of space 10. In consequence the asphalt body which is poured while in a plastic state into space 7 has at its upper end the profile of the base of a barbed arrow-head, the barbs 8 of which, assist materially in gripping and anchoring the asphalt. A strip of cloth 9 is glued to the entire base of space 7, covering the curving parts 7<sup>a</sup> recessed in the flooring member and the intermediate part formed by the base of the plaster of Paris wedge. The purpose of this cloth strip is to take up any exudations or tricklings from the asphalt body, and any leakage of water percolating through the superimposed packing material. As the exudations or percolations reach the insertion they fill its pores and cause the glue to swell, thereby making the cloth practically impermeable. As indicated above space 7 is filled with asphalt in a plastic state, which, after becoming hard is restrained from moving upward by the fact that the longer of the parallel sides of the prism is the upper one, forming the first of the retaining anchors. This asphalt body extends for a short distance up into the lower end of the space 10, which approximates to the shape of a parallelepiped, having two projections 11, on each side formed by recesses in the ends of the floor members, spaced apart vertically so as to make the flat portions 12 of the sides approximately equal to each other.

In order to take up any vertical movements on the part of the jointing material, such as may arise from expansion and contraction or from gases proceeding from the asphalt body, a thin, horizontal layer 13 of suitable resilient material such as cork chips, mineral wool previously treated with an anti-rusting composition, or the like, is spread over the top of the asphalt body, the

top of said layer reaching up as far as the bottom of the lower of the lateral projections 11. All of the space 10 of approximately rectangular section, lying above the resilient layer is now filled with concrete, preferably containing the same proportions of sand, gravel and cement as the concrete of which the floor members are made. The top 14 of this body is stricken level, at such a height above the surface of the floor that upon setting it will be flush therewith, forming a continuous surface.

Having thus described my invention and the manner of putting it into practice, what I claim as new and desire to have protected by Letters Patent is the following:

1. In a water-proof joint for the meeting ends of a pair of concrete floor members which rest on a flat supporting member the combination of a composite body of jointing material made up of strata of different obturating substances, poured while in a plastic state into a space left between said ends, all of said substances being adapted to become hard and tenacious when dry, a plurality of projections on the sides of said composite body, fitting into recesses in the faces of said ends, a strip of cloth interposed horizontally between the two lower strata of said body of jointing material, of the shape and size of the horizontal section of said body at the height of the insertion of said strip of cloth and a stratum composed of a plurality of pieces of a resilient material adapted to withstand disintegration inserted horizontally between the two upper strata of said body of jointing material and completely covering the upper face of the lower of said two upper layers.

2. A water-proof joint for the meeting ends of a pair of concrete floor members resting on a flat supporting member said joint consisting of jointing materials poured in a plastic state into a space left between said meeting ends, said space consisting of a series of prisms each of different vertical cross-section, having a common height equal to the width of said floor member ends, the lower prism having the section of an inverted isosceles triangle, the apex of which is formed by the abutment of corresponding points of said meeting ends; a body of an absorbent jointing material filling said triangular prism, a prismatic space above said triangular prism, having a vertical cross-section the base of which is formed by a curve in each member end and symmetrical in the two ends extending well outward away from the median line of said joint, and curving slightly downward from the base-angles of said inverted triangle; meeting at its outer ends the sides of said second prismatic space which slopes outwardly and upwardly, forming acute angles at points of meeting the corresponding part of the upper

side of said section, each of the parts of said upper side sloping with a slight downward inclination toward said median line, but stopping well short of it, running into the  
5 corresponding side wall of a third prismatic space lying next above said second prism having a section of irregular figure; a body of asphaltum filling said second prism and extending for a short way into the lower  
10 part of said third prismatic space and laid upon a cloth strip covering said base of said second prism, being secured thereto by adhesive means, a vertical cross-section of rectangular figure for said third prismatic  
15 space, having a plurality of recesses in said side walls, projecting outwardly with respect to said median line and spaced vertically apart so that the intervening flat portions of said side walls are approximately  
20 equal to each other, a body of concrete run into said third prismatic space above its lower portion occupied by said asphalt body and separated therefrom by a thin horizontal layer of resilient material not liable  
25 to disintegration by moisture, outwardly projecting anchoring ledges formed on said concrete body by said recesses in said side walls and integral with said side walls, said projections filling said recesses, the upper

surface of said joint formed by the upwardly 30  
turned side of the rectangular prism of concrete flush with the upper surfaces of said floor members and forming therewith a continuous surface of homogeneous material, substantially as described. 35

3. In combination with the meeting ends of plastic floor members, said ends being shaped to provide divergent base portions, intermediate reversed portions, and spaced parallel upper grooved portions, a water 40  
proof joint therefor formed of plastic material for filling the space between divergent portions, a textile lining for the base of the space between the recessed portions, an asphalt filling for said recesses and the 45  
spaces therebetween, said filling resting on the textile lining, a layer of resilient material on the top of the said filling, and a concrete filling in the grooves and the spaces therebetween and seated on said resilient 50  
material.

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

JULIUS G. ZWICKER.

Witnesses:

G. A. GUERRA,  
EDUARDO ROMERO.