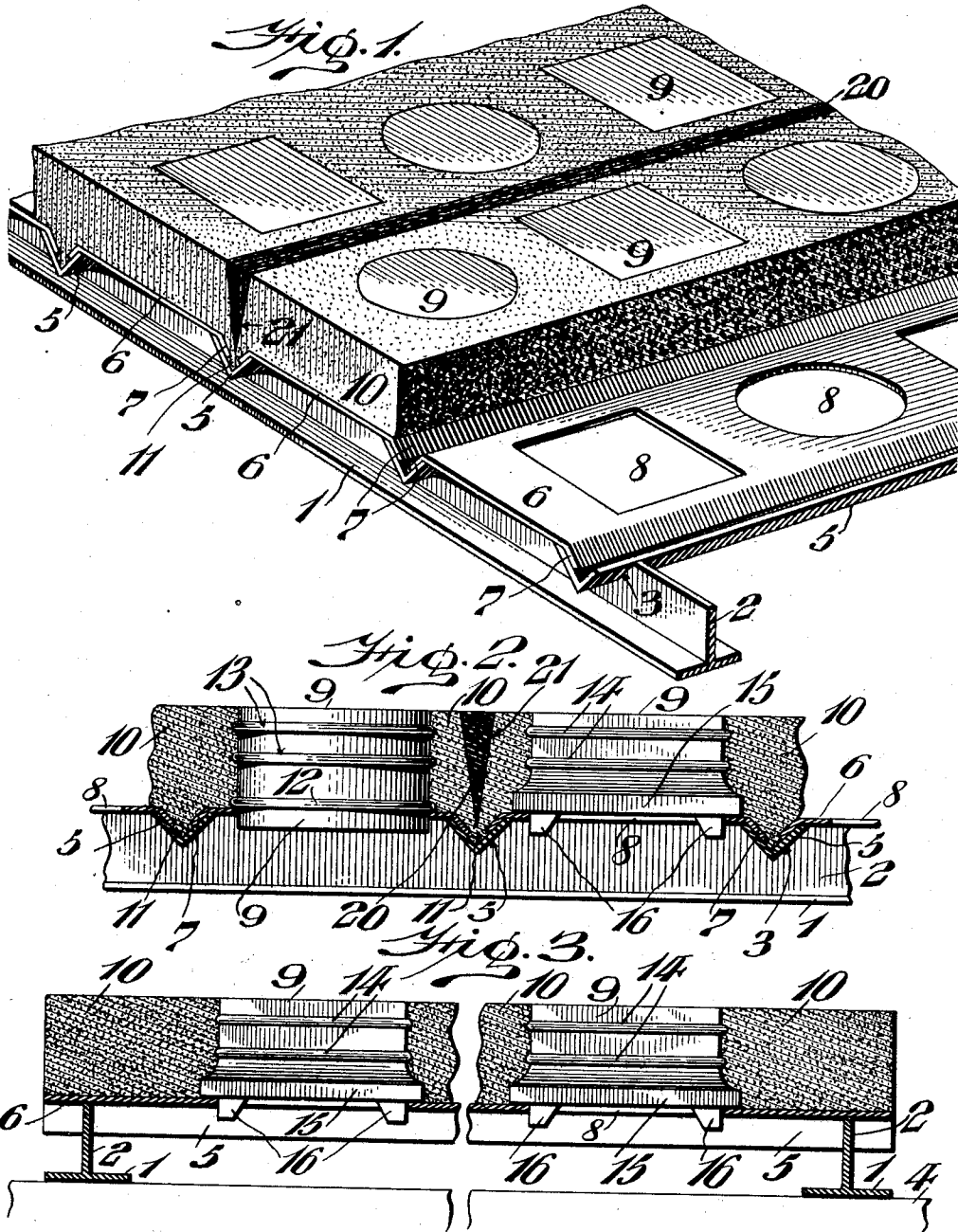


L. W. MULFORD.
 SIDEWALK, FLOOR, VAULT, AND ROOF LIGHT CONSTRUCTION.
 APPLICATION FILED JUNE 12, 1911. RENEWED JAN. 4, 1913.

1,062,987.

Patented May 27, 1913.

2 SHEETS—SHEET 1.



WITNESSES

H. Richterich
L. Rouville,

INVENTOR

Logan Willard Mulford.
 BY *Wiedersheim & Gumbert,*

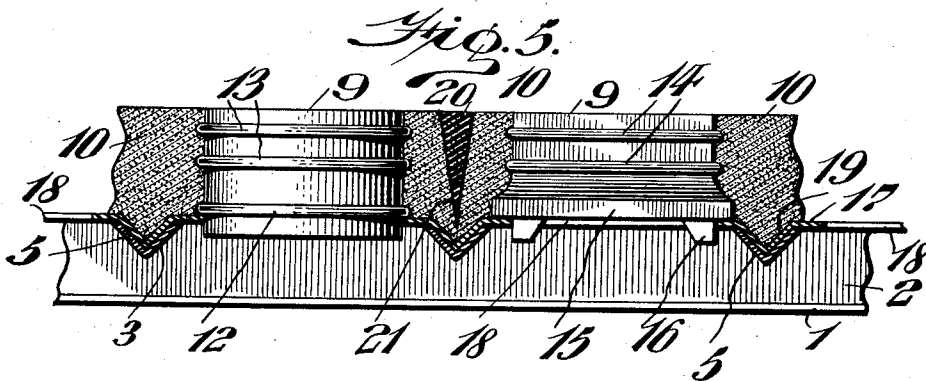
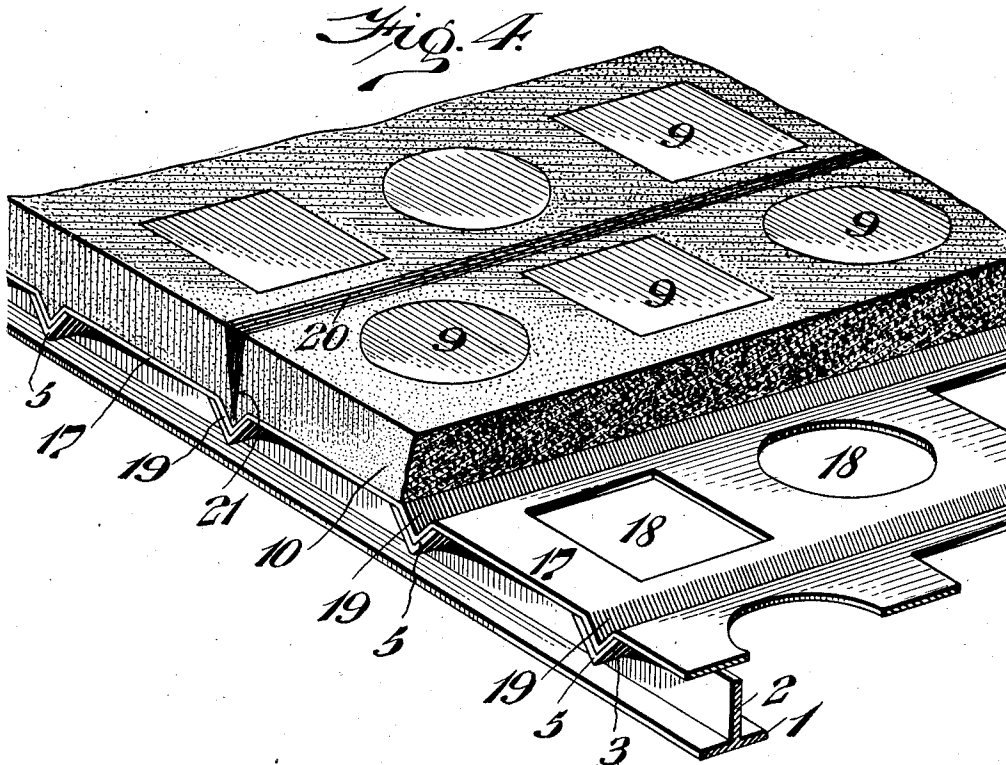
ATTORNEYS

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WITNESSES

H. E. Dieterich
L. Douville

INVENTOR

Logan Willard Mulford.
BY *Hedersheim & Gaintauts.*

ATTORNEYS

UNITED STATES PATENT OFFICE.

LOGAN WILLARD MULFORD, OF NARBERTH, PENNSYLVANIA, ASSIGNOR TO AMERICAN BAR LOCK COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

SIDEWALK, FLOOR, VAULT, AND ROOF LIGHT CONSTRUCTION.

1,062,987.

Specification of Letters Patent.

Patented May 27, 1913.

Application filed June 12, 1911, Serial No. 632,549. Renewed January 4, 1913. Serial No. 740,239.

To all whom it may concern:

Be it known that I, LOGAN WILLARD MULFORD, a citizen of the United States, residing at Narberth, Montgomery county, State of Pennsylvania, have invented a new and useful Sidewalk, Floor, Vault, and Roof Light Construction, of which the following is a specification.

My present invention relates to sidewalk, floor, vault and rooflight construction, and one of the main objects of my present invention is to devise a construction which may be installed by unskilled labor and which may be shipped from the factory in a knocked-down or disassembled condition, thereby enabling me to ship the stock material, such as iron or other bars or plates, either loose or tied in bundles so that after the parts are received at the place of installation they may be assembled by the employment of unskilled labor, the lenses placed in position and the binding material placed between the lenses, whereby both the cost of transportation, the cost of erection and thus the entire cost of producing the construction is materially reduced without affecting in any manner the strength and artistic finish of the completed construction.

My invention further consists of a novel sidewalk, floor, vault and roof-light construction wherein I provide novel means for forming an increased thickness of the rib of cement between the lenses.

It further consists of novel means for forming an expansible joint which will prevent any leakage of fluid through the construction.

It further consists of a novel construction of a lens supporting plate, which is assembled in a novel manner with respect to the rest of the construction.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

For the purpose of illustrating my invention, I have shown in the accompanying drawings one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise ar-

55 rangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents a perspective view of a portion of a completed and partly completed sidewalk, floor, vault and roof-light construction embodying my invention. Fig. 2 represents a sectional elevation of a portion of Fig. 1. Fig. 3 represents a sectional elevation of Fig. 1, taken at right angles with the section seen in Fig. 2. Fig. 4 represents a perspective view of another embodiment of my invention. Fig. 5 represents a sectional elevation of Fig. 4.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, in a copending application filed by me on April 6th, 1911, Serial No. 619,330, and allowed May 9th, 1911, I have described and broadly claimed a novel construction of a skylight, vault, floor and roof-light construction, in which primary spacing devices are adapted to support secondary spacing devices with which latter bridging strips are adapted to cooperate to support the lenses and in my present invention I have dispensed with the use of the bridging strips and employ in lieu thereof, a novel construction of lens supporting plates.

I have preferred to show the primary spacing bars 1, in the present instance, as consisting of an inverted T-shaped bar, the upwardly extending web 2 of which is provided with recesses or slots 3 which, in the present instance, are V-shaped in order to form seats, it being understood that the primary spacing devices 1 are adapted to be supported in any desired manner, such as for example on abutments 4, in the vault, room, or building where my novel construction is to be installed. The notches or recesses 3 are located at any desired distance from each other and are adapted to receive the transversely extending supporting bars 5, which, in the present instance, for the sake of illustration, have been shown as V-shaped in order to engage the recesses 3.

6 designates strips or plates of metal, or other desired material, which are seated on the upper face of the transversely extending supporting bars 5 and provided at opposite edges with the downwardly deflected portions 7 which are adapted to closely engage a portion of the inner face of the trans-

versely extending bars 5, it being understood that in this embodiment, the extensions or deflected portions 7 preferably do not extend to the bottom of the V-shaped bars 5.

5 8 designates apertures of any desired contour in the plates 6 and these apertures are adapted to be covered by lenses 9 which may be of any desired or conventional form, as will be clearly apparent from Fig. 1.

10 In the embodiment seen in Figs. 1 to 3 inclusive, two adjacent parallelly arranged secondary bars 5 support one of the plates 6 which is longitudinally adjustable thereon and which may extend any desired distance and serves as a support and spacing device for the lens and as a support for the binding material 10, it being noted from Figs. 1 and 2 that the binding material 10 extends below the lower ends of the extension 7, as indicated at 11, which binds the secondary bars 5 relatively to the plate members 6. In case a round lens is employed, the same preferably is provided with a lower rib 12 which is adapted to seat on the plate 6 and also 25 provided with one or more ribs 13 which interlock with the concrete 10. If a square lens is employed, the same preferably is provided with one or more ribs 14 which interlock with the concrete 10, while the lower 30 portion is provided with a laterally extending flange 15 which is seated on the plate 6, and with lower lugs or foot flanges 16 which pass through an aperture 8 whereby the lenses are properly spaced relatively to each 35 other.

In the embodiment seen in Figs. 4 and 5, I have shown another embodiment of my invention wherein, instead of using a series of plates 6, I employ a continuous plate 17 40 which is provided with lens receiving apertures 18 which may be of any desired contour, said plates 17 having the V-shaped depressions 19 therein which are adapted to seat in and interlock with the V-shaped bars 5 in order to prevent any improper relative 45 movement of the parts, it being noted that in this construction the binding material 10 is wholly supported by the plate 17.

Special attention is directed to the novel 50 expansible joint which I provide, whereby the leakage of water through the construction is positively prevented. At desired distances apart throughout the construction, I provide a waterproof composition 20 which 55 is seated in the V or other shaped groove 21, said groove being located in alinement with the secondary bars 5 which, in the present instance, for the purpose of illustration, I have shown as having a contour of a V although as will be apparent any desired form of secondary bar may be employed. The 60 groove or slot 21 terminates a desired distance from the bottom of the bar 5 but preferably extends beneath the upper surface thereof, thereby providing for the expansion

and contraction of the materials without affecting the solidity of the completed construction. It will be evident that if any liquid should leak into the groove 21, which in practice is opened at its lower end due to the expansion and contraction of the concrete, such liquid will be retained within the chamber of the secondary bar 5 or in the embodiment seen in Figs. 4 and 5 will be retained in the chamber formed by the deflected portion 19 so that such liquid is prevented from passing through the construction. 70 75

When it is desired to install my novel device, the primary spacing bars 1 are located on suitable abutments at desired distances apart in accordance with the load which they are designed to carry, the secondary bars 5 are then placed in position so as to interlock with the seats 3 in the primary bars 1. The plates 6 are then placed in position so that they will be seated on the upper face of one of the angles of one of the bars 5 and the deflected portions 7 will engage the side of one of the angles of the bars 5, so as to interlock therewith. The lenses are then placed in position so as to cover the apertures 8 and be seated on the plates 6, it being noted that the lenses are carried and spaced by the lens supporting plates. The binding material, such, as for example, cement or concrete, is then filled in between the lenses to the level thereof, so that the binding material will secure the lenses in position and will also extend into the recess or chamber of the bars 5 in such a manner that portions 7 of the plates 6 will be covered by the binding material and also the bars 5, and a bond will be formed between such plates and the bars 5. 80 85 90 95 100 105

In the embodiment seen in Figs. 4 and 5, it will be seen that the parts are assembled in a similar manner except that the lenses and cement supported on the plate 17, is adapted to extend over a plurality of the laterally extending bars 5 and is deflected in such a manner as to interlock with the secondary bars, it being noted that in this embodiment, the same as in the embodiment seen in Figs. 1 to 3 inclusive, there is no likelihood of the concrete passing through the construction or between the plates and the supporting bars. 110 115

In my present device, as in my allowed application to which I have hereinbefore referred, the bars employed may be cut the desired lengths at the factory and then shipped in bundles, with the lenses and the apertured plates, from the factory to the place of installation, at which the same may be assembled and the construction completed by unskilled labor. 120 125

In so far as I am aware, I am the first in the art to devise a sidewalk, floor, vault and roof-light construction provided with 130

an expansible joint wherein an underlying bar will coöperate therewith to positively prevent any leakage through the joint from passing through the construction, and it is to be understood that my claims to such features are to be interpreted with corresponding scope. I am also the first in the art, in so far as I am aware, to devise a construction wherein a plate of material having lens receiving apertures therein is provided, which is adapted to support and space the lenses and support the binding material, and which is provided with depressions extending below the walls of the apertures in order to form an increased thickness of the binding material between the lenses. It will further be apparent that in the broad scope of my invention, the primary bars 1 and the secondary bars 5 may have any desired contour given thereto and are not limited to the type shown for the purpose of illustrating one embodiment thereof. It will also be seen that my device when assembled and completed is protected against the injurious effects of expansion and contraction due to variations of temperature, owing to the novel manner in which the parts coöperate and that my novel construction is also protected against leakage at all points, and I am enabled to produce a surface of any desired length. Special attention is also directed to the fact that in my novel construction the lens supporting plates are longitudinally adjustable relatively to the secondary bars, and these plates may be wholly supported on the secondary bars or if desired they may also engage with the primary bars as is evident.

It will now be apparent that I have devised a novel and useful construction of a sidewalk, floor, vault and roof-light which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description, and while I have, in the present instance, shown and described a preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

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

1. In a sidewalk, floor, vault and roof-light construction, supporting elements including a longitudinally grooved bar, lenses carried by the supporting elements, binding material surrounding the lenses, and means coacting with said binding material to permit the expansion and contraction thereof and coacting with the groove of said bar to prevent leakage through the construction.

2. In a sidewalk, floor, vault and roof-light construction, supporting elements including an element having a groove in its upper face, lenses carried by said supporting elements, binding material surrounding the lenses and having a groove in alinement with the groove in said bar, and elastic waterproofing material filling the groove in the binding material.

3. In a sidewalk, floor, vault and roof-light construction, supporting elements including an element having a groove in its upper face, lenses carried by said supporting elements, binding material surrounding the lenses and having a V-shaped groove in alinement with the groove in said bar and extending therinto, and elastic waterproofing material filling the groove in the binding material.

4. In a sidewalk, floor, vault and roof-light construction, primary bars adapted to rest upon suitable supports, secondary bars carried by the primary bars and having grooves in their upper faces, apertured plates longitudinally adjustable relatively to the secondary bars, lenses covering the apertures in said plates, and binding material surrounding the lenses, covering the plates and filling the grooves whereby the plates and secondary bars are interlocked with the binding material.

5. In a sidewalk, floor, vault and roof-light construction, primary bars adapted to rest upon suitable supports and having recesses therein, secondary bars engaging the walls of the recesses of the primary bars, plates having lens receiving apertures therein and carried by adjacent secondary bars, lenses covering the apertures in said plates and binding material surrounding the lenses and filling said bars whereby an increased thickness of binding material is formed intermediate said lenses.

6. In a sidewalk, floor, vault and roof-light construction, primary bars suitably supported, secondary grooved bars adapted to interlock therewith and spaced thereby, apertured plates seated on said bars, said plates being longitudinally adjustable relatively to said bars, lenses covering the apertures in said plates, portions of said plates terminating intermediate the upper and lower faces of said secondary bars, and binding material surrounding the lenses and extending into the groove formed by said bars.

7. In a sidewalk, floor, vault and roof-light construction, primary bars suitably supported, secondary V-shaped bars adapted to interlock therewith and spaced thereby, apertured plates seated on said bars and deflected to interlock therewith, said plates being longitudinally adjustable relatively to said bars, lenses covering the apertures in said plates, the deflected portions of said

plates terminating intermediate the upper and lower faces of the secondary bars, binding material surrounding the lenses and extending into the groove formed by said bars, and means located above said secondary bar and coöperating with said binding material permitting the expansion and contraction thereof and coöperating with a secondary bar to prevent leakage of liquid through the construction.

8. In a sidewalk, floor, vault and roof-light construction, spacing bars, secondary bars carried and spaced by the spacing bars, plates having lens receiving apertures and having deflected portions engaging secondary bars to prevent lateral movement of said plates in a direction parallel to the length of the primary bars, lenses covering said apertures, and binding material surrounding the lenses and covering the plates and the secondary bars.

9. In a sidewalk, floor, vault and roof-light construction, primary bars, secondary bars supported and spaced thereby, apertured plates longitudinally adjustable relatively to the secondary bars and seated

thereon, and having portions deflected to engage said bars, lenses covering the apertures in said plates, binding material surrounding the lenses and covering said plates, and means coacting with the binding material to permit the expansion and contraction thereof, and coacting with a secondary bar to prevent leakage through the construction.

10. In a sidewalk, floor, vault and roof-light construction, primary bars suitably supported, secondary grooved bars adapted to engage therewith and spaced thereby, apertured plates longitudinally adjustable on said secondary bars, lenses covering the apertures in said plates, binding material surrounding the lenses and extending into the groove formed by said bars and means located above a secondary bar and coöperating with said binding material to permit the expansion and contraction thereof and coöperating with a secondary bar to prevent leakage of fluid through the construction.

LOGAN WILLARD MULFORD.

Witnesses:

H. S. FAIRBANKS,
C. D. McVAY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."