(No Model.)

P. M. BRUNER.

ILLUMINATING AREA SPANNING PAVEMENT.

No. 588,725. Patented Aug. 24, 1897.

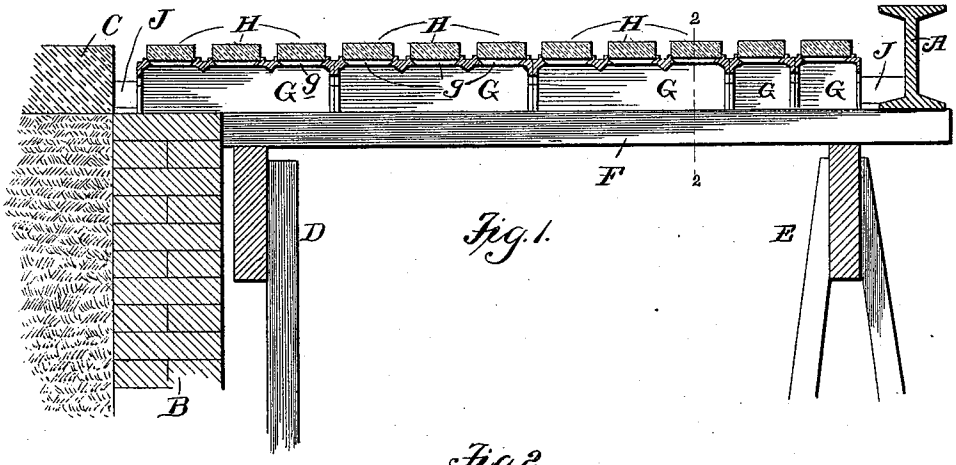


Fig. 1.

Fig. 2.

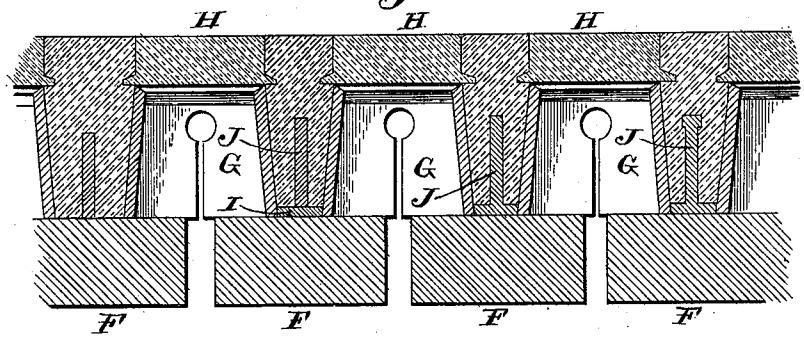


Fig. 3.



Fig. 4.

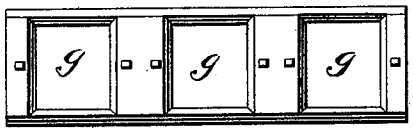


Fig. 5.

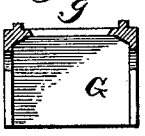
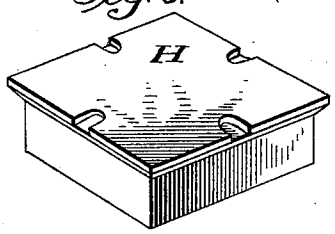


Fig. 6.



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UNITED STATES PATENT OFFICE.

PRESTON M. BRUNER, OF ST. LOUIS, MISSOURI.

ILLUMINATING AREA-SPANNING PAVEMENT.

SPECIFICATION forming part of Letters Patent No. 588,725, dated August 24, 1897.

Application filed March 16, 1896. Serial No. 583,385. (No model.)

To all whom it may concern:

Be it known that I, PRESTON M. BRUNER, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Illuminated Area-Spanning Pavements and Substructures for Same, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a sectional view showing the substructure in position and the lenses arranged thereon preparatory to receiving the composition forming the pavement proper. Fig. 2 is an enlarged sectional view taken on the line 2 2, Fig. 1. Fig. 3 is a longitudinal sectional view of one of the removable sectional molds. Fig. 4 is a top plan view of the same. Fig. 5 is a longitudinal sectional view of one of the sectional molds, the same being reduced in length for filling out spaces when the ordinary molds are too long to be used. Fig. 6 is a detail view of the lens.

This invention relates to a new and useful improvement in illuminated area-spanning pavements and substructure for the same, the object being that the finished pavement shall have embedded in it regular rows of lenses which transmit light to the area and basement beneath.

My invention comprises the feature of embedding the glass lenses in the body of the concrete, which necessarily involves means for supporting the lenses in position while the pavement is being built. In the means so employed for this purpose are included a removable substructure which holds the lenses in proper position and other features of novelty which I claim as new and as part of my present invention.

Another feature of my invention resides in the strengthening-girders which extend across the area-way, which strengthening-girders space the sectional molds of the substructure and which, when the molds are removed, form the facing of the ribs and act as a permanent support for the pavement.

In the drawings I have illustrated an I-beam A, which we will assume is the building edge of the area-way, and a wall B, which we will call the "pavement edge" of the area-way, C indicating the sidewalk-pavement. It is obvious that this particular arrangement will not be found in all area-ways, as varying conditions exist which might necessitate a slight change in the pavement itself or the substructure for the same.

D and E are ground supports, upon which are arranged, preferably transversely of the area-way, studding or strips F. This studding may be of any size or dimensions, but I prefer to use the same about as arranged in the drawings. Upon this floor of the substructure are arranged rows of sectional molds G, placed end to end and side by side, as shown. These sectional molds are preferably made about a foot long and of such height as it is desired the ribs of the pavement shall be deep. The side walls of these molds also converge toward the top to facilitate their removal and before using the molds are preferably greased on the outside to prevent the adhesion of the composition thereto. The end walls of these molds are preferably slotted, as shown, and in the top are formed openings *g*, which are so spaced apart that when a series of molds are arranged end to end the openings will be equidistant. The walls of these openings are tapered, as shown, for the purpose of leading off any cement or composition which might leak between the lens and mold, thus preventing the composition from contacting with the lower light-transmitting surface of the lens to which it would adhere and obstruct the passage of rays of light. The tops of the molds adjacent to these openings are formed with projections or recesses to engage the lenses and hold them in place while the composition material is being laid. This I consider an essential feature in the construction of this kind of a pavement for the reason that in finishing the surface of the pavement, either by the use of a trowel, straight-edge, or wiper, it frequently happens in the practice of well-known methods that the lenses will be displaced, and it would be very hard to replace them on account of the setting of the composition. By the attachment between the lens and mold which prevents the lens from moving laterally the composition can be laid and finished without danger of displacing the lenses.

H indicates the lenses, which are formed with lateral flanges at their lower edges, which flanges are either recessed or formed with projections to coöperate with converse recesses or projections on the molds, whereby when the molds are in position and the lenses are placed over the openings *g* with their recesses or projections engaging converse parts of the mold a regular alinement of the lenses is preserved with little danger of its being broken in the laying of the composition material between the molds and around the lenses. This lateral flange around the bottom edge of the lens also serves as a support for the lens in the composition material, as is obvious.

The rows of sectional molds may be spaced by measurement to determine the width of the ribs, as when the area-way is curved and it is desired to have the lenses radially disposed, as shown to the left of Fig. 2, or the molds may be spaced by a removable templet I, (shown in Fig. 2;) but I prefer to employ a permanent templet and strengthening-bar J, as shown in Fig. 2. This strengthening-bar and templet is preferably arranged between each line of molds, and where it is to be permanent I prefer that it should be supported at its ends, as shown in Fig. 1.

In constructing a pavement of this class, the ground supports D, E, and F being in position, the floor of studding is laid as shown. The sectional mold-boxes are now placed in position on this floor and, if templets are to be used, the mold-boxes are placed according to the templets. The lenses are now arranged upon the mold-boxes and the composition material laid between the molds, around the lenses, and upon the templets, if any are used. When the composition material has set, the ground supports D, E, and F are taken away, which permits the flooring to fall. A light blow struck upon the molds, or rather a succession of light blows struck by a small hammer, will loosen the molds, so that they may be easily removed without the use of levers, as has heretofore been employed in all substructures of which I am aware. Upon the removal of the molds the pavement is finished. I might add that molds such as shown in Fig. 5 and to the right of Fig. 1 are identical in construction as the molds shown in Figs. 3 and 4, with the exception that they are much shorter and are adapted to be used in spaces where the regular size molds will not fit.

From the above description it will be seen that when it is desired to span any width within the limits of strength of the composition to sustain the floor-loads the mold-boxes can be used without requiring special lengths to be cut, as has heretofore been the practice where wooden beams were employed. The mold-boxes being arranged end to end enables the train to be made any length, each mold-box or section being a "unit," as it might be termed, so many units being employed to construct the entire line.

So far as I am aware I am the first to employ short sections of indpendently-movable mold-boxes designed to be arranged end to end to form an unbroken line of individual or disconnected mold-boxes, thus dispensing with the use of wooden beams, which are objectionable for many reasons, chief among which are, first, cost, loss of material in cutting to fit different work, and unreliability as to result, the material adhering thereto and the ribs of the pavement cracking and breaking when the beams are removed. By arranging short sections end to end and spacing the lines so formed by templets no locking or connection between the sections is necessary. In fact, it is desirable that these boxes be independent of each other and remain as individuals, because they are easier to remove from the cavities, requiring no disconnection in such removal, and, being taken out separately, there is no danger of fracturing the pavement-ribs because of the short lengths of the sections.

I am aware that many minor changes in the construction, combinations, and arrangements can be made and substituted for the parts of my invention without in the least departing from the nature and principle thereof.

Having thus described my invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. The combination with removable supports, of disconnected mold-boxes arranged thereon, said mold-boxes being formed in short lengths or sections which are independently movable, said sections being arranged end to end to make an unbroken line; substantially as described.

2. The combination with removable supports, of disconnected and independently-movable hollow mold-boxes arranged thereon, end to end, to form an unbroken line, and lenses arranged on said boxes; substantially as described.

3. The combination with removable supports, of disconnected and independently-movable hollow mold-boxes arranged thereon, end to end, to form an unbroken line, lenses arranged on said boxes, and means for holding said lenses in position on said boxes; substantially as described.

4. The combination with removable supports, of disconnected and independently-movable hollow mold-boxes arranged thereon, end to end, to form an unbroken line, said boxes being open at their bottoms and having openings formed in their tops, lenses arranged over the openings in the tops of the boxes, and means for holding said lenses in place over said openings; substantially as described.

5. The combination with removable supports, of disconnected and independently-movable hollow mold-boxes arranged thereon, end to end, to form an unbroken line, templets between said lines, to space them prop-

erly, and lenses arranged on said boxes; substantially as described.

6. The combination with suitable supports, of disconnected and independently-movable hollow mold-boxes arranged in rows on said supports, and means for spacing said rows, said means forming a part of the finished pavement; substantially as described.

7. A hollow mold-box for illuminated pavement-work, said box having an opening, or openings, in its top the edges of which openings are inclined to conduct off leaking material, to prevent said material from contacting with the lower faces of the lenses, and lenses for covering said openings; substantially as described.

8. The combination with removable supports, of independently-movable molds arranged thereon end to end, to form an unbroken line, means on the tops of said molds for locating and holding the lenses, and lenses arranged on said independently-movable molds; substantially as described.

9. The combination with a hollow mold-box, having an opening or openings in its top, the edges of which openings are inclined to conduct off leaking material, projections or recesses adjacent to the edges of said openings, and a lens formed with recesses or projections to coöperate with converse parts at the edges of the opening in the mold-box; substantially as described.

10. The combination with removable supports, of independently-movable mold-boxes arranged thereon, end to end, each of said boxes being a unit in an unbroken line, said boxes being formed with spaced openings in their tops to receive and locate lenses, and lenses; substantially as described.

In testimony whereof I hereunto affix my signature, in presence of two witnesses, this 3d day of March, 1896.

PRESTON M. BRUNER.

Witnesses:
HUGH K. WAGNER,
F. R. CORNWALL.