Aug. 10, 1965 A. M. REES, JR 3,199,422

PAVEMENT LAYING APPARATUS

Filed June 15, 1961 4 Sheets-Sheet 1

Fig. 1

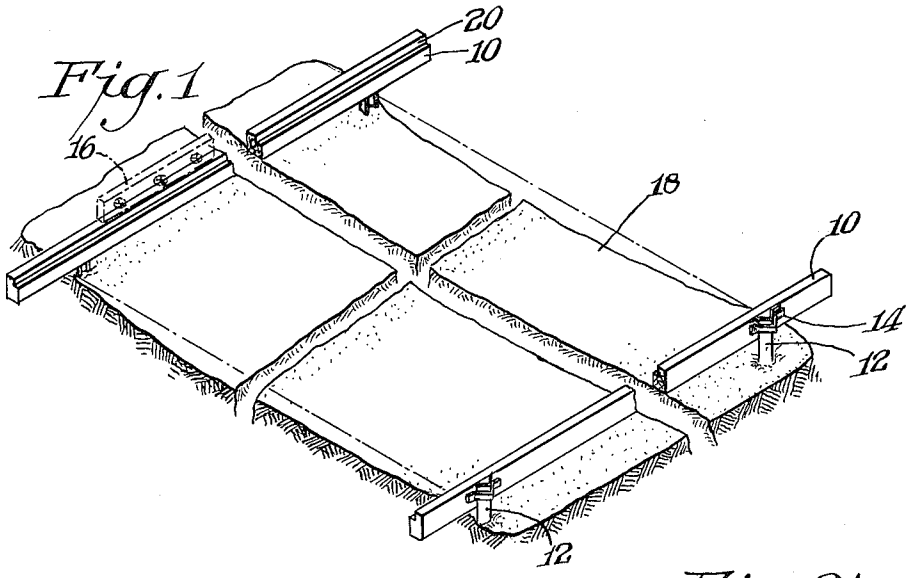


Fig. 1A.

Fig. 2A.

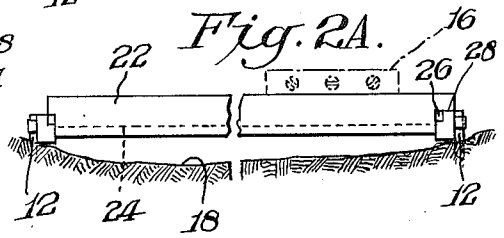
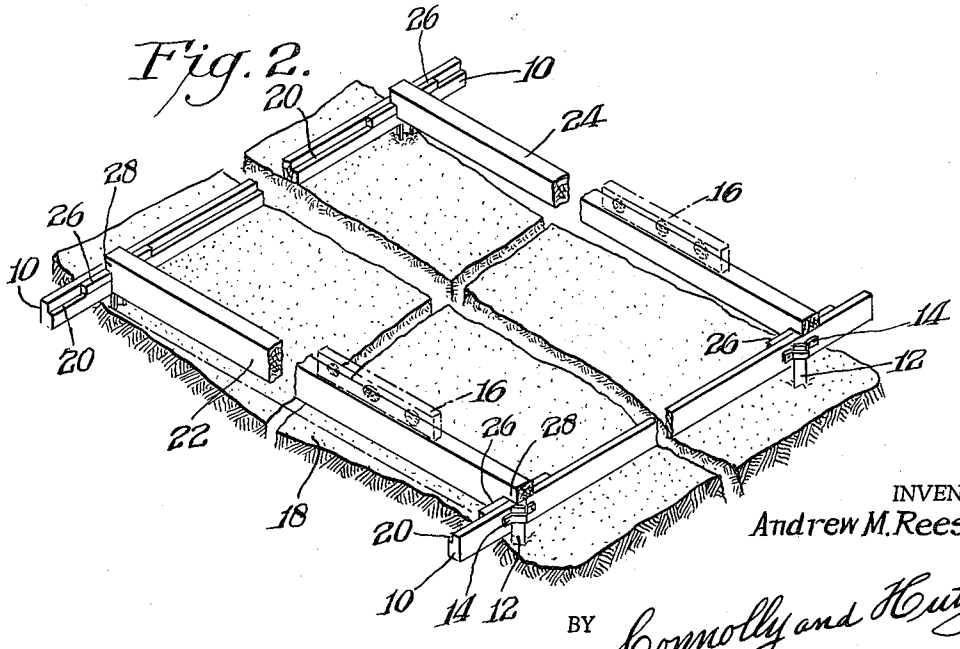


Fig. 2.



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PAVEMENT LAYING APPARATUS

Filed June 15, 1961 4 Sheets-Sheet 2

Fig. 3.

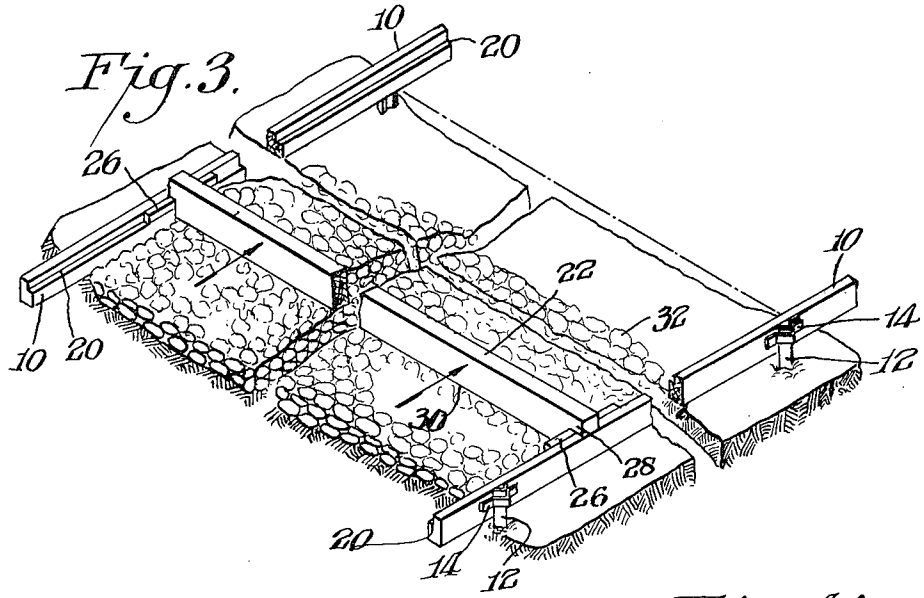


Fig. 3A.

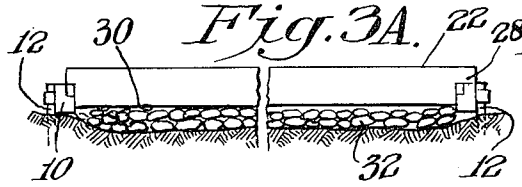


Fig. 4A

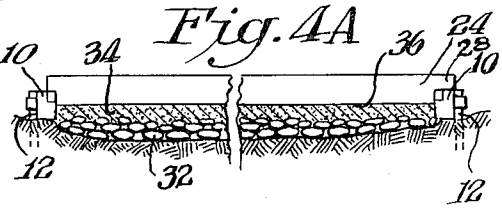
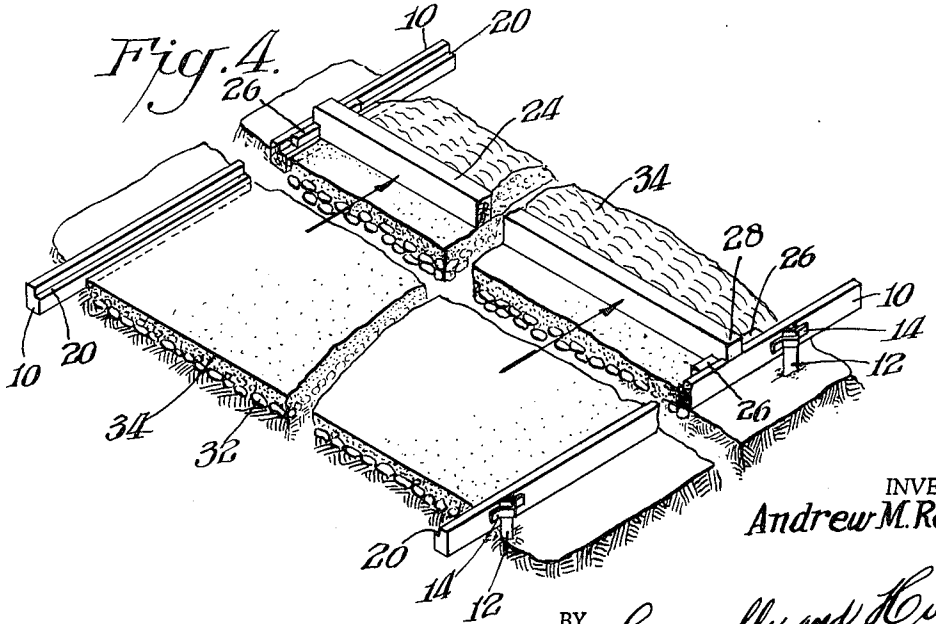


Fig. 4.



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Aug. 10, 1965 A. M. REES, JR 3,199,422

PAVEMENT LAYING APPARATUS

Filed June 15, 1961 4 Sheets-Sheet 3

Fig. 5.

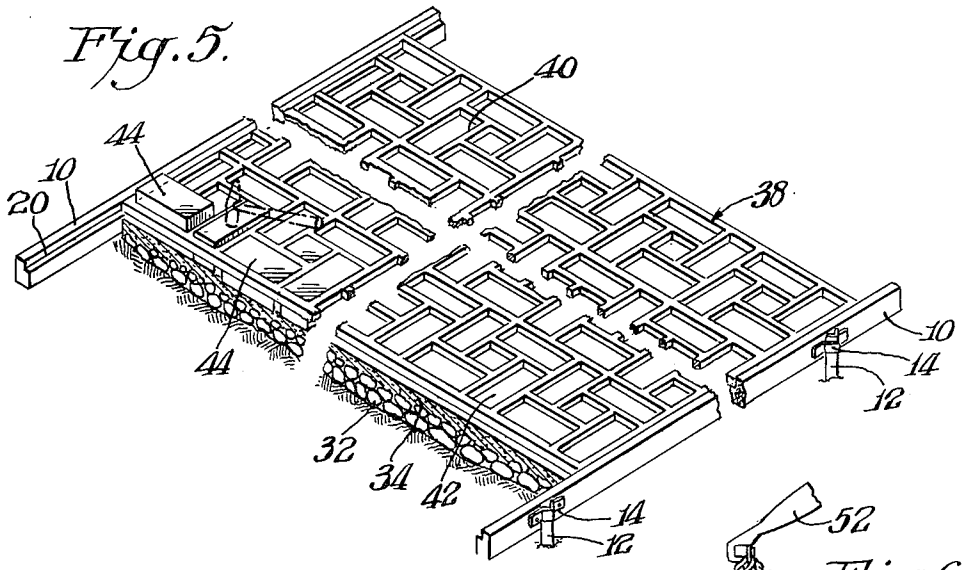


Fig. 5A.

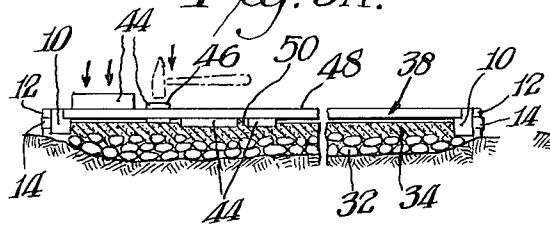


Fig. 6A.

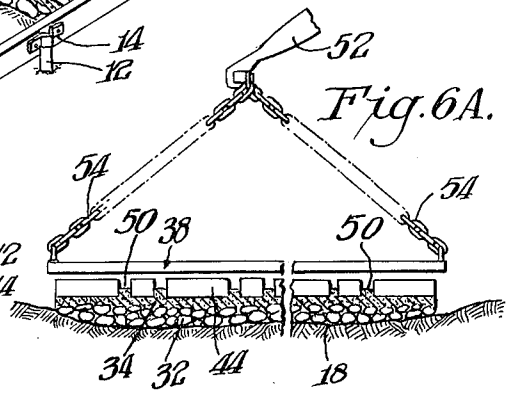
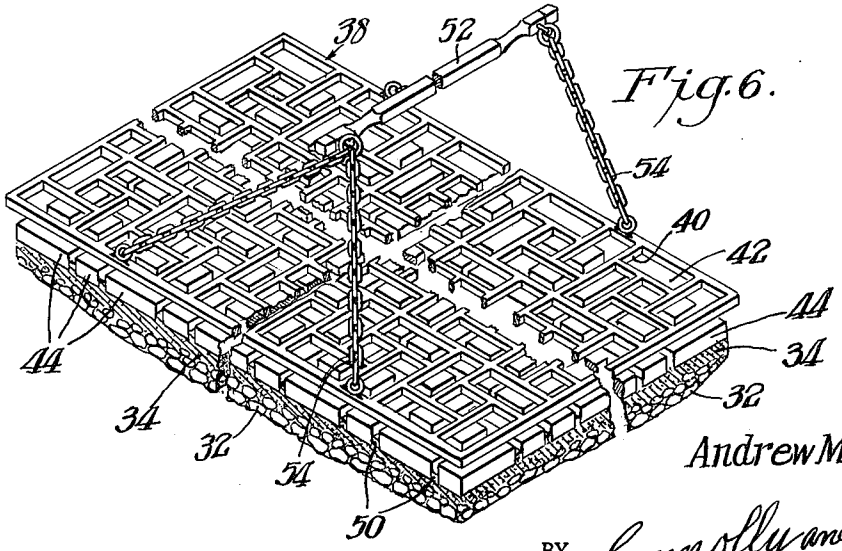


Fig. 6.



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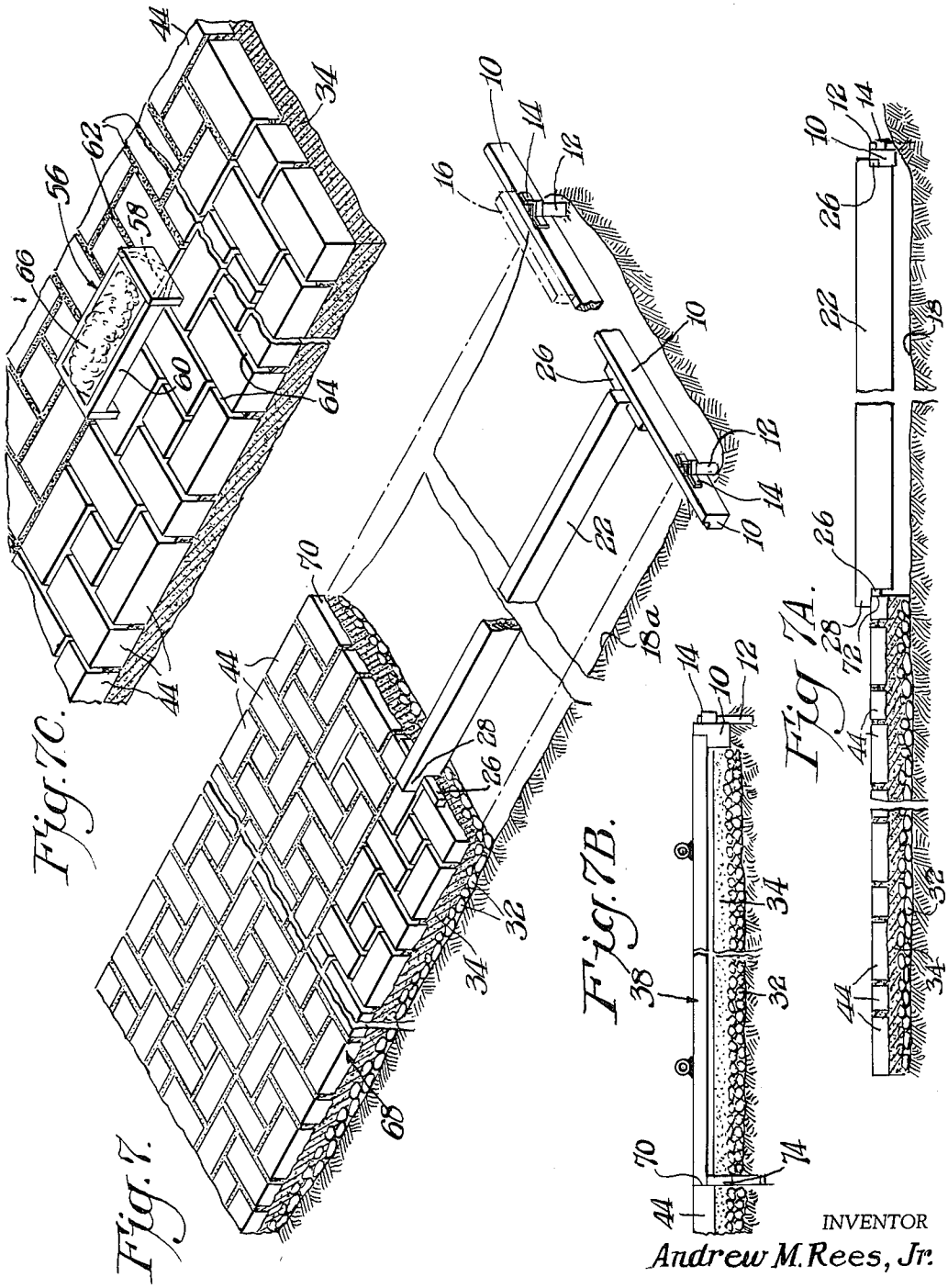
Aug. 10, 1965 A. M. REES, JR 3,199,422

PAVEMENT LAYING APPARATUS

Filed June 15, 1961 4 Sheets-Sheet 4



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3,199,422

PAVEMENT LAYING APPARATUS

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2 Claims. (Cl. 94—22)

This invention relates to an apparatus for laying pavements made of masonry units, and it more particularly relates to such an apparatus for laying these pavements in predetermined patterns.

The old fashioned brick pavement or sidewalk has been currently supplanted by the poured concrete type primarily because of the relatively greater amount of labor time and expense that laying a brick pavement requires. However, a concrete pavement is less attractive than one of brick or other masonry units; and this is particularly true with respect to pavements used for terraces and patios in yard and garden seating areas. A major portion of the expense involved in laying a patterned brick pavement is the time required in figuring out and assembling the bricks or blocks in the desired pattern.

An object of this invention is to provide a simple apparatus for economically and dependably laying a patterned pavement of masonry units.

Another object is to provide such an apparatus for laying brick pavements.

In accordance with this invention a pair of rails having tracks upon upper surfaces are installed level and parallel to each other a predetermined distance apart over a prepared bed upon which the pavement is to be layed. The rails are conveniently spaced apart upon posts extending downwardly into the ground by assembly with aggregate and mortar level rods whose shoes are assembled within the tracks of opposite rails.

These level rods are then swept over the bed along the tracks to determine the height of the dry aggregate and cement mortar fills placed within the bed. Then a patterned grating is supported upon the tracks, and bricks are deposited within the apertures in the grating to automatically assemble them in the predetermined pattern provided by these apertures. The upper level of the pavement is determined by tapping the bricks into the cement mortar bed until their upper surfaces are flush with the top of the grating which causes the cement mortar to rise part of the way up between them and levels the tops of the bricks to form a flat surface for the pavement. After the grating is lifted, the unfilled tops of the joints between the bricks may be conveniently filled by the use of a joint filling box having a slot which corresponds to the width of the subdividing bars of the grading and accordingly to the spaces between the bricks. After one section of the pattern is set in the aforementioned manner, succeeding sections are similarly set using one side of a completed section for a track surface to guide one end of the aggregate and mortar level bars as previously described.

Novel features and advantages of the present invention will become apparent to one skilled in the art from a reading of the following description in conjunction with the accompanying drawings wherein similar reference characters refer to similar parts and in which:

FIG. 1 is a perspective view of the rails of one embodiment of this invention;

FIG. 1A is an end view of the arrangement shown in FIG. 1;

FIG. 2 is a perspective view of the rails in FIG. 1 in conjunction with aggregate and mortar level rods;

FIG. 2A is an end view of the arrangement shown in FIG. 2;

FIG. 3 is a perspective view of the aggregate level and rails of FIG. 2 in one phase of use; FIG. 3A is an end view thereof;

FIG. 4 is a perspective view of the rails and mortar level rod in a similar phase of use;

FIG. 4A is an end view of the arrangement shown in FIG. 4;

FIG. 5 is a perspective view of a pattern grating supported upon a pair of rails;

FIG. 5A is an end view of the grating shown in FIG. 5 being used for guiding the assembly and installation of bricks;

FIG. 6 is a perspective view of the grating of FIG. 5 being removed from an assembled array of bricks;

FIG. 6A is an end view of the arrangement as shown in FIG. 6;

FIG. 7 is a perspective view of one rail and the aggregate level being used for preparing a succeeding section of bricks;

FIG. 7A is a side view in elevation of the arrangement shown in FIG. 7;

FIG. 7B is a side view in elevation of the manner in which the patterned grating is supported in assembling a succeeding section of pavement; and

FIG. 7C is a perspective view of a joint filling box being used for filling joints in an assembled section of pavement.

In FIGS. 1, 1A and 2 and 2A are shown a pair of guide rails 10, which are set above a prepared portion of the ground level and parallel to each other upon posts 12 extending downwardly from rails 10 and attached to them by means of straps 14. A carpenter's level 16 is used for leveling the rails, and they are set above excavated bed 18 with tracks 20 maintained a predetermined distance spaced parallel from each other by resting aggregate level and mortar level rods 22 and 24 upon rails 10 with their shoes 26 slidably inserted within tracks 20. Bed 18 is excavated to a depth sufficient to receive the aggregate and cement deposits in a manner later described in detail.

Aggregate level and mortar level rods 22 and 24 are generally similar in form; and as shown in FIGS. 1A, 2A, 3A and 4A, have a shoe 26 at one end, which is flush with this end, and another shoe 26 at the other end, which is spaced within an overhanging lip 28. Overhanging lip 28 is not used until after one section of pavement has been set as described in FIG. 7 and succeeding figures.

In FIG. 3 is shown aggregate level rod 24 being moved across tracks 20 to have its bottom edge 30 sweep the surface of a dry aggregate bed 32, which has been deposited into excavation bed 18. The dry aggregate 32 is, for example, made of roughly three inch gravel stones, or used brick bats, or used concrete chips. The amount of dry aggregate deposited is roughly equal to that required, and a sweep of aggregate level 22 across bed 32 automatically adjusts its surface to its required height as shown in FIG. 3A.

In FIGS. 4 and 4A mortar level rod 24 is swept across the surface of an approximately predetermined quantity of cement mortar 34 deposited over aggregate bed 32. The bottom edge 36 of mortar level rod 24 is a predetermined distance higher than the bottom edge 30, of aggregate level rod 22 to provide the necessary space for cement mortar deposit 34.

In FIG. 5 a patterned grating 38 is supported above cement bed 34 with its sides resting in tracks 20. Patterned grating 38 is subdivided by bars 40 onto an arrangement of apertures 42 for receiving bricks 44 in a predetermined pattern. As shown in FIGS. 5 and 5A, bricks 44 are tapped through apertures 42 until their upper surfaces 46 are flush with the top surface 48 of grating 38. When

this is done, cement mortar 34 is displaced upwardly approximately half-way up between bricks 44 to provide the lower half 50 of a cement mortar joint between bricks 44.

As shown in FIG. 6 and 6A, grating 38 is then carefully lifted straight up from assembled bricks 44 by a lifting arrangements utilizing handle 52 whose ends are connected to the sides of grating 38 by a pair of inverted V-shaped chains 54. Handle 52 permits two men standing at opposite sides of grating 38 to easily lift it up and away from the pattern of bricks that it has guided into position.

In FIG. 7C mortar box 56 having a slot 58 in the bottom of its trough 60 is being used for topping off joints 62 between bricks 44. Slot 58 is approximately equal to the width of subdividing bars 40 of grating 38, and correspondingly to the spaces 64 between assembled bricks 44. It accordingly facilitates the insertion of mortar 66 into the upper portion of spaces 64 to provide remarkably cleanly filled joints between bricks 44 and helps avoid unsightly mortar discoloration and means upon the tops of bricks 44. The length of slot 58 is, for example, equal to the length of one brick, but it may be varied for convenience in particular installations.

In FIG. 7 is shown the manner in which this apparatus is used for laying a succeeding section of pavement adjacent original section 68 prepared in the manner previously described. In FIG. 7 is accordingly shown a rail 10 which has been set above bed 18*a* a predetermined distance away from and parallel to the adjacent side 70 of original section 68, which is subsequently used for a track surface in conjunction with overhanging lip 28 of aggregate and mortar level rod 22 and 24. The outside end surface 72 of shoe 26 adjacent lip 28 is accordingly used for setting the distance between rail 10 and guide surface 70 of section 68. After rail 10 is set in a manner described in FIG. 7, dry aggregate bed 32 and cement mortar bed 34 are then deposited and surfaced in the manner previously described utilizing aggregate and mortar rods 22 and 24.

Then, as shown in FIG. 7B, one side of grating 38 is supported in the manner previously described upon track 20 of rail 10 and the other side adjacent pavement section 68 is supported upon a short post 74 driven into the ground. Bricks 44*a* (not shown) are then assembled within grating 38 in the manner previously described, and after grating 38 is lifted, the joints between the assembled bricks 44*a* are filled as shown in FIG. 7C by use of joint filling box 56.

Although the apparatus is herein described for use with ordinary paving bricks, it can also be used with any type of paving unit which is shaped to fit the apertures in a grating. Gratings can, therefore, be provided for practically any shape of paving unit such as: specially shaped bricks, flagstones or ornamental blocks. Furthermore, the beds within which the paving units are set may be of various types construction other than that described, such as an ordinary sand bed. A sand bed is of course not as durable as the described dry aggregate and cement mortar filled bed.

This apparatus speeds up the process of patterned pavement setting to such an extent that it becomes competitive

with ordinary poured concrete. Although it is not as economical as poured concrete, its slight additional expense is more than rewarded by its attractively patterned appearance. The relative economy of this apparatus toward other apparatus for the same process increases as the pattern becomes more complex. Extremely complex patterns, such as the described mosaic type, may accordingly be layed with a minimum of expense.

What is claimed is:

1. A method of laying paving units on the ground in a pattern in a cement mortar bed with the aid of a level rod and a patterned grating resting upon a pair of guide rails which comprises the steps of positioning and leveling said guide rails upon said ground a distance apart for supporting said level rod and said patterned grating between them, depositing said cement mortar bed upon said ground between said rails, determining the upper surface limit of said cement mortar bed by resting said level rod upon and between said rails and moving it across the space between them for striking off the upper surface of said cement mortar bed to said upper surface limit, positioning said grating upon and between said guide rails to dispose it at a predetermined height and horizontal position for guiding insertion of said paving units into said cement mortar, the lower surface of said grating being disposed a substantial distance above said determined upper surface limit of said cement mortar to permit said cement mortar to freely rise toward said grating and around said paving units when they are inserted through said grating into said cement mortar, inserting said paving units through said grating into said cement mortar bed, and aligning the top surfaces of said paving units with the upper surface of said patterned grating whereby they are disposed in a flat surface and immersed to a predetermined depth in said cement mortar to provide a substantial uniform joint between said paving units and said cement mortar.

2. A method as set forth in claim 1 wherein an aggregate bed is deposited upon said ground between said rails before said cement mortar bed is deposited, another level rod is rested upon and between said rails and moved across the space between them for striking off the upper surface of said aggregate bed, the lower striking edge of said other level rod being disposed at a lower level than said level rod for striking off said upper surface of said cement mortar bed whereby the position of said aggregate bed below said cement mortar bed is accurately controlled.

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