This invention relates to road building apparatus, while the instant improvements are, in part, a division from my co-pending application, Serial Number 390,970, filed September 7, 1929.

In the main the present invention has for an object to enable the construction of concrete, or other similar material, pavements more expeditiously and economically than heretofore and in a manner better adapted to tie in with a previously or subsequently laid adjacent lane.

Another object is to provide a simple and reliable apparatus by which pavement construction is effected and may be continuously carried out in a practical manner with a minimum of labor costs.

With the foregoing and other objects in view this invention essentially consists of a mold for placement on road beds for the purpose of confining the paving material until set, said mold including a metallic grid-like reinforcement for permanent incorporation in the constructed pavement; and the side components of said mold affording a track, later removable, upon which the apparatus employed may travel continuously during mixture and laying of the pavement material.

In order that the invention may be clearly understood and carried into practical effect, I will now describe the same with reference to the accompanying sheet of explanatory drawing and, thereafter, point out those features deemed novel over prior art in the following claims.

In the drawing: Fig. I is a perspective view of my improved mold for laying paving mixture with apparatus useful and economical in making a pavement.

Fig. II is a cross-sectional view illustrating one convenient manner of assembling the lateral and longitudinal reinforcing elements hereinafter more fully explained.

Fig. III is a side elevation looking toward the left hand of the preceding view.

Fig. IV is a detail view of a binding means.

Fig. V is a fragmentary perspective view of a means for interconnecting the lateral and longitudinal reinforcing elements.

Fig. VI is a detail side view of a modified manner of assembling the lateral reinforcing elements.

Fig. VII is a sectional view of the preceding illustration.

Fig. VIII is a view showing how flanking sections of pavement may be laid alongside one previously finished.

Fig. IX is a fragmentary detail thereof; and,

Fig. X is a view showing a further modification.

In the drawing similar characters of reference refer to like or corresponding parts throughout the several views.

Referring more in detail to Figs. I-IV of the drawing, my improved mold for laying concrete pavement, or the like, comprises opposing side members or rails 1, conveniently channel cross-section, with differential-width upper and lower flanges 2, 3, respectively; said rails being also adapted to serve as tracks for guidance and progression of the pavement mixing and laying apparatus, as later on explained.

The rails 1 are formed in lengths suitable for convenient transportation and handling, while the webs 4 thereof are provided with vertically directed assembling slots 5 for passage of the free screw-threaded ends 6 of lateral reinforcing rods 7, hereinafter again referred to. As a means for arranging the rails 1 in alignment and parallelism, I make use of spacer elements or junction bars 8, arranged at intervals along said rails, and having their lower edges vertically notched at 9, for passage of the longitudinal reinforcing rods 10.

The head space in the assembling slots 5 allows for any sagging of the rails 1, and consequent possible disturbance of the reinforcing rods 7, 10, during the laying of the pavement 11; while the rod ends 6 are fitted, at each side of the rail webs 4, with nuts 12 to securely clamp the aforesaid parts in mold constituting relation. Obviously a continuous pavement 11 may be laid by eliminating the junction bars 8; while the number of lateral and longitudinal reinforcing rods 10 can be varied at will, by using only a certain number of the assembling slots 5 and vertical notchings 9.

The longitudinal and lateral reinforcing rods 10, 11, respectively, may be clamped or wired together at their points of intersection, in a manner well known in the art, thus forming a horizontal metallic grid-like reinforcement for embodiment in the pavement 11. Or, the longitudinals 10 may be looped at intervals, as shown at 13 in Fig. V, to correspond with the spacing and for the passage therethrough of the laterals 7, in a manner obvious from said figure; such interlacing connection being brought about incident to initial assemblage of the parts above described.

Suitable chairs 14, Fig. II, may be placed in the center portion of the assembled reinforcing rods 7, 10 to prevent sagging, and to maintain their proper position in the pavement 11; while alternate lateral reinforcing rods 7 may be laid
above the longitudinal bars 10, as clearly understand-able from Fig. I, thus forming a web-like structure. As shown in Fig. IV, binding members 15 may be placed at the sides of completed aligning sections of the pavement 11, and preferably extending over an expansion joint 16, so as to give additional longitudinal strength to said pavement; such members 15 being secured to the lateral reinforcing bar ends 6, by replacing the outer nuts 12, which project beyond the sides of the pavement 11 when the side rails 1 have been removed.

In Figs. VI and VII there is shown a modified manner of assembling the side rails 1 and lateral reinforcing bars 7 without the necessity of screw-threading the ends of said bars and the application of nuts 12. This involves use of clamp devices embodying screw-threaded shanks 17 with oblong ends 18 and lock nuts 19; while the rails 1 are formed with lateral web lugs 20 apertured at 21 for passage of said shanks 17, and triangular openings 22 in the rail webs, or by bayonet cut-outs 22' in said webs and the web flanges 23. As shown in Fig. X, in assembling the rails 1 and bars 7, it will be readily apparent that the clamp device lock nut 19 is first backed-up to the yoke end 18; whereupon the shank 17 is inserted from below into the aperture 21 of the rail web, and then the end of the rod 7 moved underneath said yoke, when by manipulating the lock nut 19 it will be obvious that the yoke 18 will be forced downwardly upon the rod end and that portion thereof engaged in the lower angular corner of the opening 22 "jammed" against axial movement longitudinally or rotatively.

Referring now more particularly to Fig. I, I have shown associated apparatus convenient for making and laying pavement 11 with the aid of my novel mold hereinafter described. From this view it will be seen that the apparatus comprises two units, one consisting of a mixing and laying car 23, and the other a spreading and finishing car 24. The purpose of such division is to take off the rails 1, the weight of the mixing and laying car 23 in the vicinity of the spreading and finishing operation; while a standard tractor mixing unit can, obviously, be employed instead of the car type mixer 23 shown.

In operation, the mold side rails 1 having been laid on the road bed, at the required distance apart, and secured in place either by means of securing plus (not shown) driven through holes 25 in the base flanges 3, or by the aid of the lateral reinforcing rods 1 and end junction bars 8 as hereinafter set forth. The longitudinal reinforcing rods 10 are next laid in conjunction with the lateral rods 7 in interwoven or connected relation, as also previously explained.

Having completed assembly of the metallic grid formed by the rods 7, 10, other junction bars 8 may be located at intervals of the length of the mold through the medium of the vertical notches 9 therein, to form expansion joints in the pavement 11, if so desired. The mold thus formed is then filled with paving material 26 supplied by the mixer 27 in an obvious manner, for conventional spreading by an operator 28, leveling supplied by the sprayer car base 29, and finishing by the trailing roller 30. When the pavement 11 has hardened the side rails 1 are removed and are available for further use in construction of additional pavement 11, leaving the reinforcing members 7, 10 firmly embedded therein; while it will be apparent that several lengths of rails 1 may be aligned and secured by aid of splice or junction elements 31 applied to the abutting end webs 4 in a conventional manner. If intermediate junction bars 8 have been employed to form expansion joints 16, they will likewise be removed and replaced by appropriate packing or bitumen after known practice.

For curved or inclined surface of road bed, short sections of side rail may be used, or if desired appropriately bent rails 1 may be employed. In laying additional strips of pavement alongside of one previously "set", and to accommodate road widening or making roads in successively paralleling and aligned sections, the lateral reinforcing rods 7 may be extended, as shown in Fig. VIII. This permits an additional mold to be laid adjacent to the completed strip of pavement 11, using the same type of side rails 1, as previously set forth, or by substituting an angle iron rail 32 having vertical notches 33 for passage of the rods 7, in an obvious manner; said rail 32 being subsequently removed as soon as the new paving strip has hardened and the oped joint filled in with the same material as aforesaid. The lateral reinforcing rod threaded ends 25 6 thus employed are conveniently connected by junction sleeves 34, or they may be otherwise united. It will, accordingly, be readily understood that the rods 7, so extended from the lateral reinforcing members which tie together one or more adjacent laid strips of pavement 11 into one complete unit.

While I have illustrated and described my invention with some degree of particularity, it is to be understood that in practice various alterations therein may be effected; therefore the right is hereby reserved to the privilege of changing the details of construction, or otherwise altering the arrangement of the correlated parts, without departing from the spirit of said invention or the scope of the following claims.

When the transverse reinforcing members are connected as illustrated in the drawing, it will be understood that they are capable of transmitting stresses of tension or compression according to the nature of any transverse flexure of the slab. In this way, two or more separately laid lanes or slabs may be reinforced to possess substantially the advantages that would be possessed by the transverse reinforcement of a monolithic road.

The term slab includes an integral portion of a lane of any convenient length whether cast in place or not. As used in the claims, the terms "connected" or "connection" are not intended to be limited to connections which are structurally separate or separable or attachable, but are intended to be broad enough to cover other types of connections.

Having thus described my invention what I claim is:—

1. A concrete road comprised of at least two slabs laterally disposed in substantially abutting relation, transverse reinforcing members extending across substantially the full width of both slabs and connected to be capable of transmitting tension or compressive stresses due to transverse flexure of the road or of either slab whereby the two slabs may be connected rigidly enough to function as a monolith so far as the transverse reinforcing members are concerned.

2. A concrete road comprised of at least two substantially laterally contiguous slabs, transverse reinforcing means extending across substantially the full width of each slab and a coupling device for tying together the said reinforcing.
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whereby the two slabs may be connected rigidly 
eight to function as a monolith, so far as the 
transverse reinforcing means is concerned, and 
said coupling device being located adjacent the 
division between said slabs.
3. A concrete road comprised of at least two 
substantially laterally abutting slabs, transverse 
reinforcing means extending across substantially 
the full width of each slab, and a coupling de-
vice for tying together the said reinforcing means 
and arranged to be capable of transmitting ten-
sion or compressive stresses due to transverse 
flexure of the road or of either slab whereby the 
two slabs may be connected rigidly enough to 
function as a monolith, so far as the transverse 
reinforcing means is concerned, and said cou-
pling device being located adjacent the division 
between said slabs, and longitudinal reinforcing 
means in each slab to which the transverse re-
inforcing means is secured.

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