Aug. 30, 1927. 1,641,109

F. R. WILSON

CONCRETE REENFORCEMENT

Filed Feb. 13, 1925

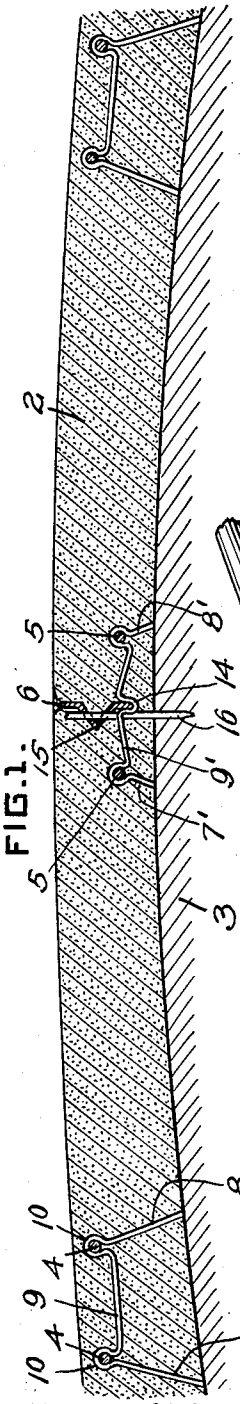


FIG. 1.

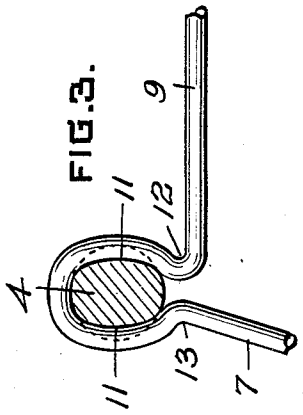


FIG. 3.

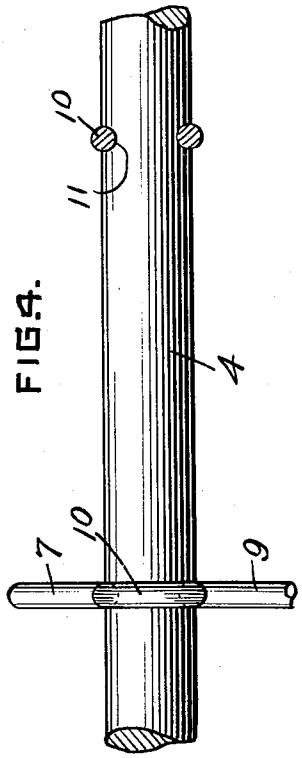


FIG. 4.

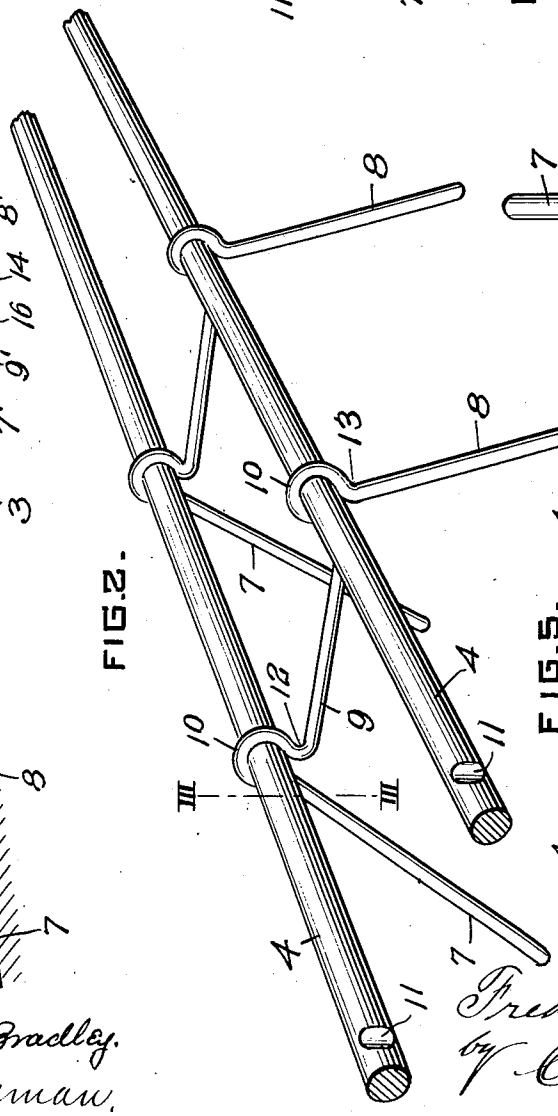


FIG. 2.

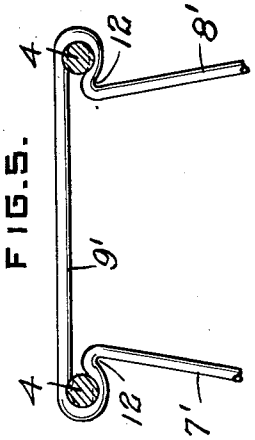


FIG. 5.

WITNESSES

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UNITED STATES PATENT OFFICE.

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CONCRETE REENFORCEMENT.

Application filed February 13, 1925. Serial No. 8,984.

My invention refers to concrete road or highway construction, and particularly to the metallic reenforcement therefor.

In modern approved highways, the side edge portions and the longitudinal center are reenforced by tension members, as rods, while the center is ordinarily divided by a thin longitudinal joint plate.

In locating such reenforcing members, and also the joint plates, it is desirable that all reenforcement as well as the joint plates when used shall be rigidly and accurately held in place to true line and grade during placing of the concrete, so as not to be deflected or disturbed during placing of the concrete. My invention consists of an improved chair construction with the above objects in view.

In the drawings, showing preferred embodiments of the invention:

Fig. 1 is a transverse section of a roadway with my improved reenforcement incorporated;

Fig. 2 is a perspective detail, showing a pair of longitudinal reenforcing bars and chairs as applied;

Fig. 3 is an enlarged cross section on the line III—III of Fig. 2;

Fig. 4 is a plan view of one of the bars, showing the chair connections;

Fig. 5 is a sectional view, showing a modified construction of chair.

In the drawings, the body of concrete 2 extends from one side to the other upon the foundation base 3, with proper crown, as in Fig. 1.

At each side edge portion, near the surface, are a pair of longitudinal reenforcing bars 4, 4, which must be supported in position on the base 3 during placing of the concrete, without disturbance, so as to remain imbedded in proper position.

Also, similar reenforcing bars 5, 5, lie continuously along the middle, one at each side of the usual center joint plate 6. Rods 4, 4 and 5, 5 are usually cut in sixteen foot lengths, overlapped, and tied together, forming continuous strands.

For the purpose of fixedly connecting and supporting the rods 4, 4, I provide at intervals of about eighteen inches, chairs each consisting of a continuous bent rod, the terminals 7, 8, of which rest on the base 3. The middle section 9 extends across between the bars 4, around which the chair rod or wire is tightly looped and clamped, as at 10.

For the purpose of ensuring a tight joint connection between the bars and the chair, the bars 4 are transversely notched or grooved at one or both sides, as at 11. This is easily and cheaply done by pinching rolls or dies, which press the grooves 11 into the bar at proper distances apart for the desired spacing of the chairs. The latter are bent to shape with the loops 10 sufficiently open to admit the bars, after which the loop is tightened by clinching in any suitable way, as by swaging, dies, etc.

The cross connecting member 9 is dropped sufficiently below the bar to provide for pinching the chair rod inwardly around the bottom of the bar, as at 12, the leg member 7 or 8 being similarly pinched inwardly as at 13.

Such connection is made at both sides, so that, when a pair of bars are thus provided with chairs from one end to the other, they are firmly and immovably connected, with corresponding series of supporting legs 7, 8, at each side. One series of legs 7 is preferably slightly longer than the other, to compensate for the more abrupt crowning of the base and to locate the bars in proper relation to the crown of the highway.

Another advantage in lowering the cross rod 9 below the bars 4 is that they are thereby spaced sufficiently below the surface of the highway to prevent spawling or cracking of the surface.

The chair construction for the middle reenforcing bars 5, 5 is generally similar to the side chairs and their connection, being attached and secured to the bars in the same manner by clamping around the grooves 11. The middle cross member 9′, however, in such case is looped downwardly, as at 14, providing a supporting saddle at intervals for the bottom edge of the joint plate 6. The chairs for the middle bars are somewhat longer distances apart, say thirty inches, and their supporting legs 7′, 8′, are comparatively short, for lower location of

the bars 5. If it is desired to drive the legs into the base, they may be correspondingly lengthened.

The plates 6 are deflected as usual, at 15, and are secured by the usual dowel pins 16 driven into the base 3, and are also held by the customary transverse dowel bars at intervals, not shown.

In Fig. 5, I show a modified construction, in which the chair rod is fastened around the bars 4 in the same manner as already described, but the connecting cross rod 9′ is extended straight across from one bar to the other.

The legs 7′, 8′, are set inwardly somewhat, providing for the clamping bend 12 closely towards the cross rod and tightening the rod closely in contact with the holding groove or grooves. Such construction may be used with equally good results under certain circumstances, and will operate to support the main bars in the manner stated.

The construction and operation of the reenforcing bars and chairs of either form will be readily understood from the foregoing description. They are fabricated and connected as complete units, ready for placement and use in the field in suitable lengths of sixteen feet, more or less, according to specification. They are easily handled and may be compactly packed together for storage or shipment. The fixed character of the clamped joints avoids any shifting or supplemental tying by the usual tie wires in the field, and they constitute unvarying and efficient reenforcing members of ample strength, with great saving in time and resulting economy. They may be manufactured, of course, in any suitable size as to gauge of the bars or rods, length, spacing, etc., or may be otherwise changed or varied by the skilled mechanic, but all such changes are to be understood as within the scope of the following claims.

What I claim is:

1. In combination with a pair of parallel bars each having a series of pressed cross grooves opposite each other, a series of transverse chair members tightly embracing the bars by said grooves providing intervening cross members and downwardly extending individual supporting legs.

2. In combination with a pair of parallel bars each having series of oppositely arranged pressed cross grooves, a corresponding series of transverse chair members consisting of rods bent around and tightly clamped to the bars in said grooves providing intervening cross members and downwardly extending diverging individual supporting legs.

3. In combination with a pair of parallel bars each having series of oppositely arranged pressed cross grooves, a corresponding series of transverse chair members consisting of rods bent around and tightly clamped to the bars in said grooves providing intervening cross members and downwardly extending diverging individual supporting legs of different length.

4. In combination with a pair of parallel bars each having series of oppositely arranged pressed cross grooves, a corresponding series of transverse chair members consisting of rods bent around and tightly clamped to the bars in said grooves providing intervening cross members each having an intervening depressed loop forming a joint plate support, and downwardly extending individual supporting legs.

5. Concrete reenforcement consisting of a bar having longitudinally spaced pairs of oppositely arranged transverse grooves pressed in the bar, and a supporting rod tightly embracing the bar across and partly within said grooves and extending therefrom to provide individual supporting members each having a bearing terminal, to provide a supporting chair.

6. Concrete reenforcement consisting of a pair of spaced apart bars in parallel each having longitudinally spaced oppositely located pairs of oppositely arranged transverse grooves pressed in the bar, and a continuous supporting rod with its middle portion extending across between the bars, tightly embracing each bar across and partly within said grooves and extending therefrom in the form of leg portions to provide a supporting chair.

7. Concrete reenforcement consisting of a pair of spaced apart bars in parallel each having series of longitudinally spaced oppositely located pairs of oppositely arranged transverse grooves pressed in the bar, and a corresponding series of continuous supporting rods with their middle portions extending across between the bars, tightly embracing each bar across and partly within said grooves and extending therefrom in the form of leg portions to provide supporting chairs.

In testimony whereof I hereunto affix my signature.

FREDERICK R. WILSON.