

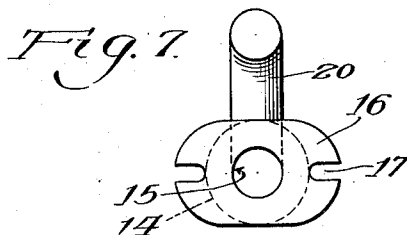
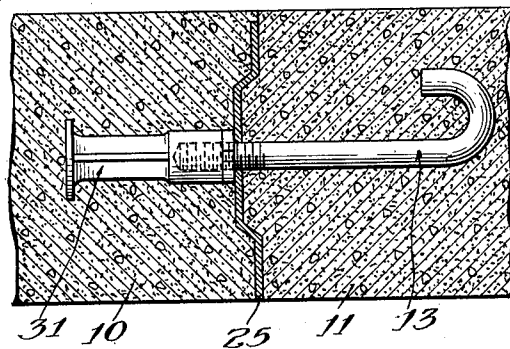
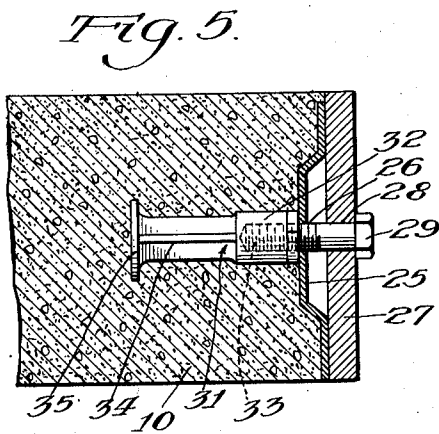
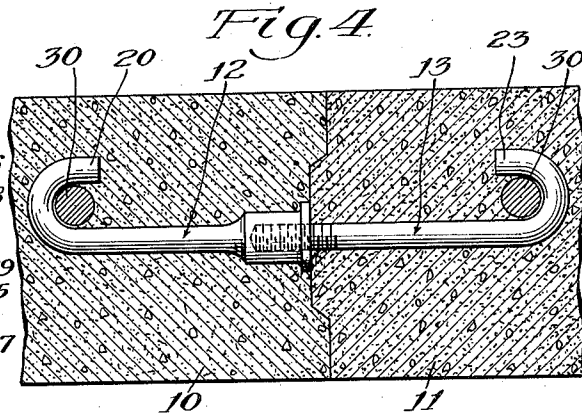
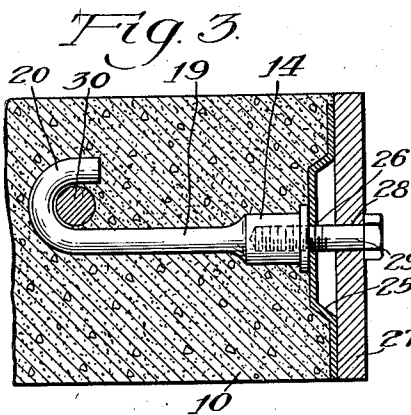
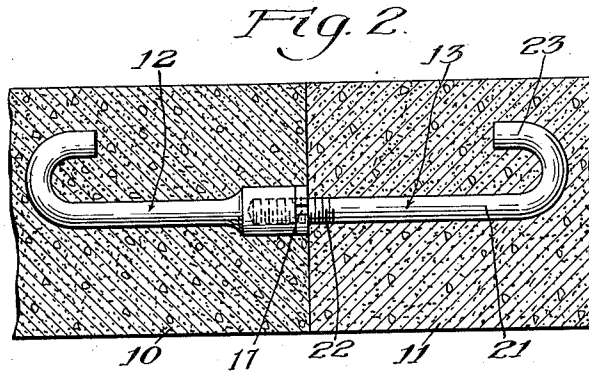
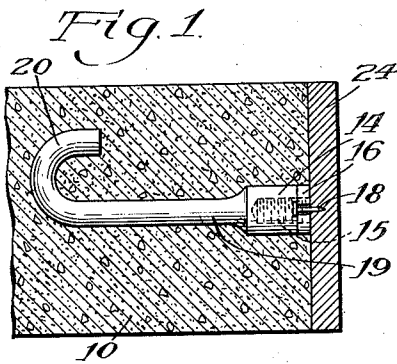
Aug. 23, 1938.

J. W. ISETT

2,127,973

ANCHORING DEVICE

Original Filed July 29, 1935 2 Sheets-Sheet 1



Inventor:
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2 Sheets-Sheet 2

Fig. 8.

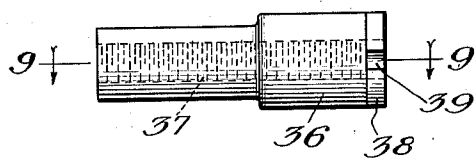


Fig. 9.

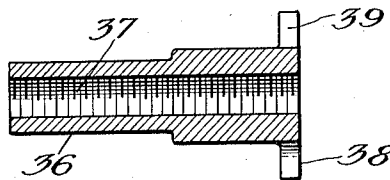


Fig. 10.

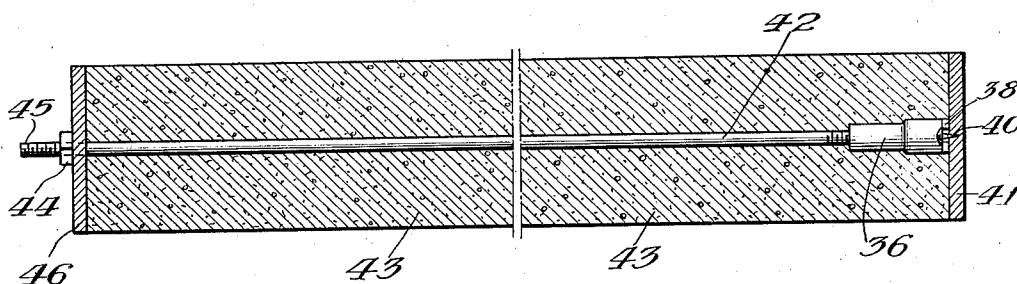


Fig. 11.

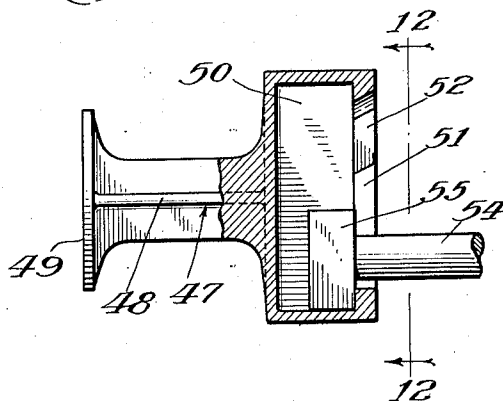
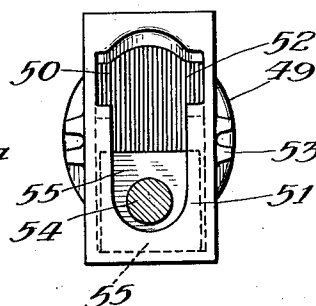


Fig. 12.



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UNITED STATES PATENT OFFICE

2,127,973

ANCHORING DEVICE

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Continuation of application Serial No. 33,682, July 29, 1935. This application March 31, 1936, Serial No. 71,858

4 Claims. (Cl. 94—4)

This invention relates to anchoring devices for use in concrete road construction. The main object of the invention is to provide means for tying together adjacent, separately formed sections of concrete roads without the use of tying means or dowel rods which protrude from one section while an adjacent section is being graded or prepared. Reference is made to my Patent No. 2,039,420 issued May 5, 1936, of which the present application is a continuation.

Another object is to provide means for the purpose described in the preceding paragraph, which may also be used in combination with reinforcing rods which may be put under tension for the purpose of preventing cracking of the concrete section.

Heretofore, for the purpose of tying the two sections of the road together and transmitting a portion of the wheel load from one section to the other, it has been customary to embed in the concrete being poured to form the first section of road, a plurality of spaced rods usually made of metal and approximately 4 feet in length, about half of each rod being embedded, and to bend each rod so that the free half extends at a right angle to the embedded portion and lies closely adjacent to the side surface of the concrete between the concrete and the form. When the form is removed, some of the free ends of the rods are pulled away from the section in which they are partly embedded and thus protrude while the adjacent road bed is being graded and prepared for pouring concrete thereon. After the grading is completed and before the next concrete section is poured, the bent rods are straightened so as to extend in alignment with the embedded portion and into the concrete to be poured to form the next adjacent section. This method has serious disadvantages due to the fact that the protruding portions of the rods or dowels frequently are broken off or the steel is fractured by contact with the grading machinery and the bending and subsequent straightening of the rods fractures them and causes breakage, thereby defeating their intended purpose.

Another method heretofore used included the step of driving straight rods or dowels through holes in the form, into the concrete of the first section before it became hardened, about half of each rod or dowel being embedded, with the other half protruding beyond the form. The protruding rods or dowels not only interfere with the grading machinery in preparing the sub-grade for the second section, but prevent the necessary

grading or rolling of the sub-grade close to the edge of the first poured section.

The anchoring devices herein shown and described tie adjacent road sections together and obviate the difficulties and objections mentioned. Furthermore, they may serve to support and hold in intended positions shear bars or mesh used for reinforcing concrete roads.

By the use of the anchoring devices of my invention I obviate the necessity for increasing the thickness of the concrete at or near the inner edges of adjacent sections, as well as at or near the inner edges of the adjacent sections in multiple lane roads poured in sections, in which the proximate edges of adjacent sections are provided with the conventional tongue and groove or hinge construction.

In the drawings:—

Fig. 1 is a vertical sectional view through part of a section of concrete road and the removable wood form used in the construction of same showing one member of my anchoring device in position in the road section.

Fig. 2 is a vertical sectional view of the section shown in Fig. 1 with the form removed and a second section of concrete adjacent to the first section showing the two cooperating members of my anchoring device in position in adjacent, separately formed road sections.

Fig. 3 is a vertical sectional view similar to Fig. 1 showing part of a section of concrete road provided with a vertical groove metal plate for forming a tongue and groove in the joint to produce a hinge-like effect between the two sections of concrete and also showing the form used in constructing the section.

Fig. 4 is a vertical sectional view showing the section illustrated in Fig. 3 with the forms removed and with another concrete section poured and anchored adjacent to the first mentioned section.

Fig. 5 is a vertical sectional view of a road section similar to that shown in Fig. 3 but showing a modified form of anchoring member.

Fig. 6 is a vertical sectional view showing the section shown in Fig. 5 with the wooden or steel form removed and with another concrete section adjacent the first mentioned section.

Fig. 7 is an enlarged end view of that member of the anchoring device shown in Fig. 1.

Fig. 8 is a side elevation of a modified form of anchoring device.

Fig. 9 is a sectional view taken in the plane of the line 9—9 of Fig. 8.

Fig. 10 is a vertical sectional view through a

section of concrete road, broken between its ends, showing the anchoring member of Figs. 8 and 9 embedded in the concrete, in combination with a reinforcing rod which has been placed under tension.

Fig. 11 is a longitudinal vertical sectional view of a modified form of anchoring device which may be substituted for the anchoring members of Figs. 1, 3 and 5.

Fig. 12 is a vertical sectional view taken in the plane of the line 12—12 of Fig. 11.

Referring to that embodiment of my invention shown in the drawings, adjacent concrete sections are indicated at 10 and 11. In Figs. 1 and 2 the anchoring device comprises a metal insert 12 and cooperating tying device 13. The insert 12 consists of a tubular body 14, internally screw threaded at 15, provided with flanges 16 cut away at 17 to provide recesses for nails 18. The body 14 merges into a bolt 19 terminating in a hook 20. The tying device 13 consists of a bolt 21 having a screw threaded end 22 and a hook 23.

A conventional wooden form 24 is shown in Fig. 1 to confine the concrete section 10. The inserts 12 are nailed to the inner surface of that part of the form which defines the edge which will be adjacent to another concrete section. After the inserts have been fixed in their intended positions, preferably from 1 to 5 feet apart, the concrete is poured to form the section 10. In due course the form 24 is removed and the flanged mouths of the internally screw threaded tubular bodies 14 are exposed. After the grading for the adjacent section 11 has been completed tying devices such as the hook bolts 13, or other suitable devices such as stud bolts, threaded rods, smooth or deformed, anchor bolts or the like, having screw threaded ends 22, are screwed into the tubular bodies 14 as shown in Fig. 2. The concrete to form the section 11 is then poured adjacent the section 10 to cover the devices 13. Thus separately formed sections of concrete are tied together efficiently and undesired relative movement of the sections is prevented. When sections located transversely of the roadway are constructed according to my invention, I prefer to use hook shaped tying devices 13 or other suitably formed devices which tie the concrete sections together, whereas between sections which extend longitudinally of the roadway I prefer to use smooth bolts or shear bars painted and greased so as to permit relative movement between the sections longitudinally of the roadway.

Referring to that embodiment of my invention shown in Figs. 3 and 4, the adjacent concrete sections 10 and 11 indicate sections disposed transversely of the road and separated by a vertically disposed plate 25 for producing the conventional grooved longitudinal center joint. The plate 25 is known as a "groove form plate" and when used in constructing roads according to my invention is provided with a plurality of apertures 26 spaced apart preferably two to five feet, longitudinally of the plate. In this embodiment of the invention the form 27 is similar to the form 24 heretofore mentioned except that it may be made out of metal or wood and is provided with apertures 28 which register with the apertures 26 of the plate 25. After the form 27 has been set up to define the section 10, the plate 25 is positioned adjacent the inner surface of that part of the form which defines the side margin of the concrete adjacent the section 11

to be subsequently poured. Inserts 12 and the plate 25 such as heretofore described, are held in place by means of headed bolts 29 which extend through the apertures in the form 27 and plate 25 into the screw threaded bodies 14 of the inserts. The inserts are spaced preferably 2 to 5 feet apart, longitudinally of the form 27, and between the upper and lower edges of the form. After the concrete 10 has set the bolts 29 and form 27 are removed. If desired the grooved plate 25 may also be removed to be used again for forming other sections. By the use of the anchorage devices of my invention, permitting the removal and reuse of the plate 25, I save a substantial sum of money, approximately eighteen hundred dollars per mile.

The removal of the form 27 or of the form 27 and plate 25 will expose the internally screw threaded portion 15 of the inserts 12 at that vertical face of the section 10 which will abut the adjacent section 11. After the grading for the section 11 has been completed, tying devices 13 are screwed into the inserts 12 and then the concrete to form the section 11 is poured adjacent the section 10 to cover the devices 13. The shape of the grooved plate 25 produces a hinge-like joint between the concrete sections 10 and 11 which is held securely together by means of the tying devices without the unnecessary and uneconomical use of thickened center edges, thereby effecting a great saving in concrete.

In Figs. 3 and 4, I have shown shear rods 30 in the hooked ends of the anchoring members 12 and 13, extending longitudinally of the road sections 10 and 11. These rods reinforce the concrete 10 and 11 and assist in maintaining the road sections in proper relationship to each other. The hooked ends may also be used for holding the reinforcing mesh used in road construction. When such rods or mesh are hooked into the hooked end of the insert of one section and the hooked end of the tying device of an adjacent section, continuous transfer of wheel load from one section to another results.

In Figs. 5 and 6 are also shown the forms 25 and 27 of Figs. 3 and 4, but in Fig. 6 the plate 25 is shown as retained between the sections 10 and 11. A modified form of insert designated 31 has been substituted for the member 12. The insert 31 comprises a body 32, internally screw threaded at 33, said body merging into a cross shaped portion 34 ending in a disc 35. This form may be used when the hooked form is not required. The radially extending members of the portion 34 prevent rotation of the insert in the concrete.

The modified form of insert shown in Figs. 8, 9 and 10 comprises a body 36 internally screw threaded from end to end as indicated at 37, and provided with a flange 38 flush with one end, and having a notch 39 at each side of the flange. This form of insert may be used with tying devices, such as heretofore described, to connect adjacent separately poured concrete sections, and it may also be used as shown in Fig. 10, where the flanged end is nailed at 40 to a form 41, and a rod 42 is inserted in the opposite end. The rod 42 may extend longitudinally of the road 43, from one expansion joint to another, or transversely across a road section to be poured. After the concrete 43 has hardened, a nut 44 is tightened on the threaded end 45 of the rod 42 (the form 46 having been removed) to place the rod 42 under tension for the purpose of preventing cracking of the concrete.

In Figs. 11 and 12 I have shown a modified form of insert which may be substituted for the forms shown in Figs. 1 to 7, inclusive. It comprises a body 47 having radially projecting, longitudinally extending flanges 48 and an end flange or disc 49. At the other end the body is enlarged to form a rectangular recess 50 and face 51 having an opening 52 wider at its top than at its lower portion. Notched ears 53 are used for receiving nails for temporarily attaching the insert to a form as heretofore described. A bolt 54 having a square head 55 is adapted to enter the recess 50 and be retained by the flange or face 51. The bolt 54 may have a hook on its opposite end or may be plain, deformed or of any other desired form.

The two-piece anchoring devices herein shown and described serve the dual purpose of tying together adjacent, separately poured concrete sections without having any part protruding from one section while an adjacent section is being graded or prepared, and of anchoring shear bars, reinforcing rods or mesh such as are used in road construction.

The devices herein described may be used in the construction, repairing, widening and resurfacing of roads, and the form of the inserts and tying devices herein shown and described may be varied without departing from the scope of my invention.

I claim:—

1. In an anchoring assembly of the character described, an embedding member comprising a shank portion, a laterally projecting portion, an integrally formed socket portion and a form or plate-engaging flange surrounding the socket portion, together with means in combination therewith for maintaining the form or plate-engaging flange of the embedding member temporarily in abutting engagement with a form or plate, said means comprising a fastening device extending between the form or plate and the embedding member for holding said member and

said form or plate in abutting engagement with one another.

2. In an anchoring assembly of the character described, an embedding member comprising a shank portion, a laterally extending portion and a socket portion, said socket portion being adapted to abut a concrete form or plate, together with means in combination therewith for maintaining said embedding member temporarily in abutting engagement with said form or plate, said means comprising a member having one extremity adapted to engage the form or plate and the opposite extremity adapted to interlock within said socket portion.

3. In an anchoring assembly of the character described, an embedding member comprising a shank portion, a socket portion having a supporting flange formed thereon and a laterally projecting extremity extending from the shank portion, all of said portions being formed integrally with one another, and a tying member in combination therewith, said tying member comprising a shank portion, a laterally projecting portion extending from one extremity of the shank portion and a portion extending from the opposite extremity of the shank adapted to have interlocking engagement with the socket portion of the embedding member.

4. In an anchoring assembly of the character described, an embedding member comprising a shank portion, a socket portion and a hook-shaped extremity extending from the shank portion and adapted to have supporting engagement with a concrete reinforcing member, and a tying member in combination therewith, said tying member comprising a shank portion, a laterally projecting portion extending from one extremity of the shank portion and adapted to have supporting engagement with a concrete reinforcing member and a portion extending from the opposite extremity of the shank adapted to have interlocking engagement with the socket portion of the embedding member.

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