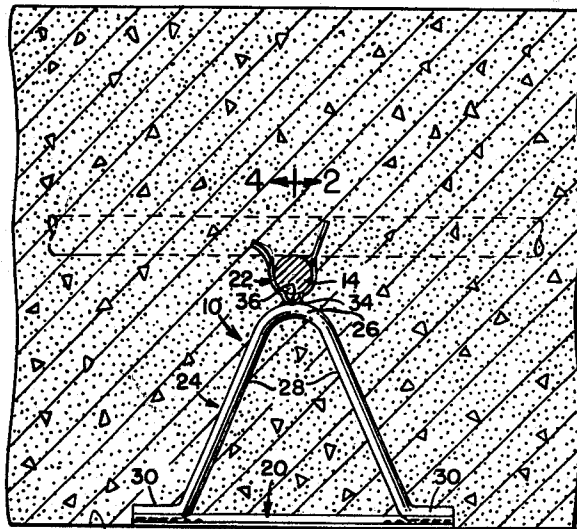
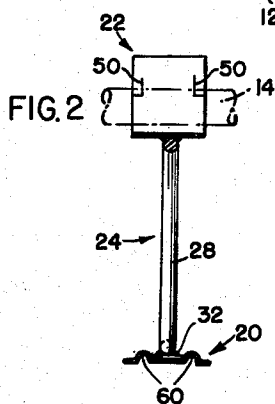
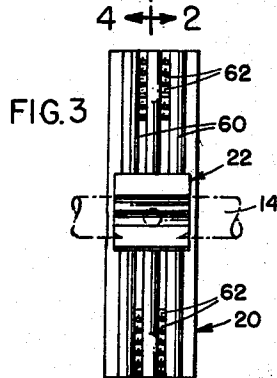
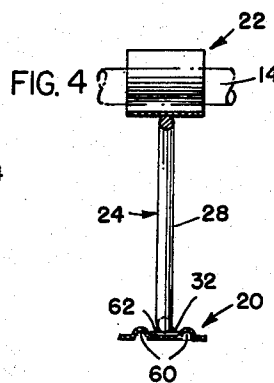
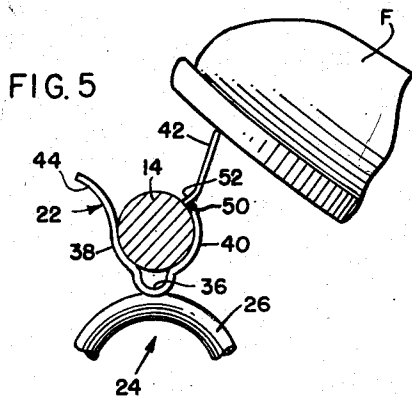
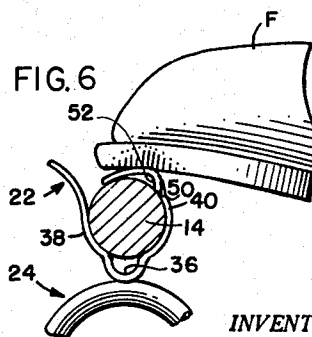


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G. J. ERIKSSON
 ROD-SUPPORTING CHAIR FOR CONTINUOUSLY
 REINFORCED CONCRETE PAVING
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FIG. 1



INVENTOR:
 GEORGE J. ERIKSSON
 BY *Roman Herlach*
 ATT'Y

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ROD-SUPPORTING CHAIR FOR CONTINUOUSLY REINFORCED CONCRETE PAVING

George J. Eriksson, Morton Grove, Ill., assignor to Superior Concrete Accessories, Inc., Franklin Park, Ill., a corporation of Delaware

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1 Claim. (Cl. 50—514)

The present invention relates to concrete reinforcing means and more particularly to a rod-supporting chair which is adapted to be positioned on a subgrade and, in combination with like chairs, serves to support at a predetermined level above the subgrade a series of reinforcing rods in connection with a concrete paving installation.

It is among the general objects of the present invention to provide an improved reinforcing rod-supporting chair which, due to the novel design and construction thereof, will more accurately support a reinforcing rod at a predetermined height above the subgrade, height being a critical factor in many installations. A similar and related object of the invention is to provide such a rod-supporting chair which is stronger and more rigid than present-day chairs for the same purpose.

One of the principal and specific objects of the invention is to provide a rod-supporting chair having associated therewith novel locking means for retaining a reinforcing rod in position on the chair in the upper region thereof, such locking means being automatically effective upon downward pushing of the rod into the rod-receiving cradle which is provided for it at the upper end of the chair legs.

Another and important object of the invention is to provide in a chair of this character a novel sand plate which forms a base support for the chair legs and by means of which a more effective welded connection between the legs and the sand plate may be attained than has heretofore been possible.

Yet another object of the invention is to provide in a chair of the type under consideration a novel rod-receiving cradle which is of one-piece construction and is in the form of a sheet metal stamping, and wherein the previously-referred to locking means for the rod which is associated therewith is inherent in the stamping itself and is created at the time the stamping operation is performed.

A still further object is to provide such a rod-supporting chair having associated therewith a rod-receiving cradle which is of the snap-in type and embodies a bendable wrap-around tab on one of the cradle arms or side portions, the tab being conveniently accessible to the foot of the operator for bending purposes.

The provision of a reinforcing rod-supporting chair which is extremely simple in its construction and is comprised of but three parts, available from commercial flat sheet stock and round rod stock, thus contributing toward economy of manufacture; one which is rugged and durable and, therefore, will withstand rough usage; one which requires no machining in its manufacture; and one which is well-adapted to perform the services required of it, are further desiderata which have been borne in mind in the production and development of the rod-supporting chair constituting the present invention.

Other objects of the invention and the various advantages and characteristics thereof will be apparent from a consideration of the following description.

In the accompanying single sheet of drawing forming a part of this specification, one embodiment of the invention has been shown.

In this drawing:

FIG. 1 is a sectional view taken vertically and longitudinally through a concrete paving installation and show-

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ing one of the improved rod-supporting chairs of the present invention operatively associated therewith, the chair being shown in side elevation;

FIG. 2 is a vertical section taken on the line 2—2 of FIG. 1, the rod being shown in dotted lines or phantom and the concrete removed in the interests of clarity;

FIG. 3 is a top plan view of the chair, the rod being shown in phantom;

FIG. 4 is a sectional view taken on the line 4—4 of FIG. 1, the rod being shown in phantom and the concrete removed;

FIG. 5 is an enlarged sectional view of the upper portion of the chair shown in FIG. 1; and

FIG. 6 is a sectional view similar to FIG. 5 but illustrating the manner in which the wrap-around tab of the chair cradle is made effective.

Referring now to the drawing in detail, and in particular to FIG. 1, wherein an exemplary form of reinforcing rod-supporting chair constructed in accordance with the principles of the present invention has been shown as being operatively installed in a paving construction, the chair assembly has been designated in its entirety at 10 and is shown as being supported on a subgrade 12 and supporting a cylindrical, horizontal, transversely extending, reinforcing rod 14. The horizontal, transversely extending, reinforcing rod 14 serves to support thereon one or more horizontal, longitudinally extending, reinforcing rods 16 in the usual manner of pavement reinforcement. The chair assembly 10 and the rods 14 and 16 in associated relation therewith are shown as being embedded in the concrete 18 of the paving installation on the subgrade 12.

Referring now to the additional view of the drawing, the chair assembly 10 is comprised of but three parts, namely, a lower sand plate 20, an upper cradle 22, and an intermediate interconnecting leg support 24, the three parts being welded together in a manner that will be described presently. The leg support and the sand plate constitute a lower supporting base for the cradle.

Briefly, the cradle 22 is in the form of a sheet metal stamping which is generally U-shaped in transverse cross section as viewed in FIGS. 1 and 5 and is formed from a flat rectangular sheet of metal stock, preferably, spring steel. The upper end of the cradle is open and the rod 14 is adapted to be pushed downwards through the open end of the cradle and to seat within the bottom regions of the cradle. The leg support 24 of the chair 10 is formed from a length of cylindrical steel rod stock which is bent intermediate its ends to provide an inverted generally U-shaped structure having an upper bight or crest portion 26 from which there extend downwardly and outwardly in diverging fashion a pair of straight legs proper 28 having laterally turned foot portions 30 at their lower ends. The foot portions 30 are welded as at 32 to the sand plate 20, while the crest portion 26 of the leg support 24 is welded as at 34 to the lower regions of the cradle 22.

More specifically, the U-shaped cradle 22 is provided with a bight portion 36 which is of relatively small radius of curvature and from which there extend upwardly two side portions 38 and 40, such side portions being generally curved on a longer radius of curvature and approximating that of the cylindrical, transversely extending, reinforcing rod 14 which is received within the cradle. The upper region of the curved side portion 40 merges with an outwardly and upwardly inclined, flat, wrap-around terminal flap 42 (see FIG. 5), the function of which will be made clear hereafter. The upper portion of the curved side portion 38 of the cradle is turned outwardly and is designated by the reference numeral 44. The over-all extent of the side portion 40 and the wrap-around flap 42 is greater than the overall extent of the side portion 38 and the outwardly turned portion 44 so that, in the free state of the cradle 22, the upper edge of the flap 42 is higher

than the upper edge of the outwardly turned portion 44.

As best seen in FIG. 5, the upper regions of the two curved side portions 38 and 40 are closer together than the diameter of the transversely extending reinforcing rod 14, and as the result, a snap-in effect is produced when the rod 14 is pressed downwards into the resilient cradle 22. This snap-in effect cannot, however, be relied upon to maintain the rod seated within the cradle under actual installation conditions where there may be a tendency for the wet poured concrete to "float" the rod, or where tamping or vibrating mechanism is employed to settle the concrete. Therefore, according to the present invention, locking means is provided for positively locking the transversely extending reinforcing rod 14 within the confines of the cradle and this means becomes automatically effective as soon as the reinforcing rod is pushed downwards into the cradle through the open upper end thereof. Accordingly, as best seen in FIGS. 3, 4 and 5, the opposite side edges of the cradle side portion 40, which includes the wrap-around flap 42, is formed with relatively short, horizontally aligned, inwardly extending slits 50 therein, and the metal of the side portion 40 immediately above each slit is turned inwardly to form an inturned portion 52. These inturned portions 52 constitute detents or friction tabs which are designed frictionally to engage the cylindrical wall of the reinforcing rod 14 and prevent upward movement of the same within the cradle 22. During downward insertion of the rod 14 into the cradle 22, these friction tabs will yield or be displaced outwards under the spreading influence of the rod and, after the rod has been received within the cradle and bottomed therein to the fullest extent of which it is capable, the friction tabs 52 will snap inwards and engage in overlying relation respective portions of the rod and hold the rod securely in position within the cradle.

Still referring, for convenience of illustration, to FIG. 5, the bight portion 36 of small curvature is connected by the weld 34 to the crest portion 26 of the leg support 24, the two curved meeting surfaces being admirably well-adapted for resistance welding operations where the sharper of the curved portions of each of the two curved parts "sinks," so to speak, into the metal of the other part at a region where the curvature is not so great. Thus, the sharply curved bight portion 36 has a tendency to penetrate the metal of the leg support in the arcuate crest portion 26 thereof, and the curved small diameter cylindrical surface of the rod stock of the leg support tends to penetrate the lesser curved bight portion 36. By virtue of these phenomena, there is a tendency for each part to flow into the other part during the effecting of the resistance weld.

Referring now to FIGS. 1, 3 and 4, the sand plate 20 is in the form of a sheet metal stamping (preferably steel) and is made from an elongated rectangular strip of flat sheet metal stock. At a distance spaced slightly inwardly from each longitudinal edge of the plate a raised rib 60 is formed, the two ribs being coextensive with the longitudinal extent of the plate. Each end region of the plate is formed with a series of transverse raised ribs 62. While five such ribs have been illustrated herein at each end region of the plate, it will be understood that a greater or lesser number thereof may be employed if desired. The ribs 62 extend between the two ribs 60 and completely bridge the distance between these two last mentioned ribs. A hole 64 may be formed in the medial region of the plate to adapt the chair for fastening by means of a nail or the like to certain types of subgrades capable of receiving a nail therein.

The laterally turned foot portions 30 of the leg support 24 overlie the two transversely ribbed portions of the sand plate and are welded by resistance welding to the ribs thereof. The foot portions 30 overlie and extend transversely of the ribs 62 and the relatively sharp curvature of the transverse ribs afford the necessary sharp projections which are essential to a strong and efficient resistance

weld. When welding heat and pressure are applied to the foot portions and to the transversely ribbed portions, the foot portions literally burn into the ribs and establish an extremely effective weld which is coextensive with the foot portions.

Referring now to FIGS. 1, 5 and 6, in effecting any given paving or other installation, the requisite number of the chair assemblies 10 are positioned upon the subgrade 12 and then fastened, if desired, in their proper selected positions. Thereafter, the transversely extending rods 14 may be placed across the cradles 22 of the transversely aligned chair assemblies. Insofar as each chair assembly 10 is concerned, the rod 14 may be pressed downwards into the open upper side of the cradle 22 by the utilization of foot pressure, the rod being pressed downwardly in the cradle until it snaps into position beneath the inwardly turned, tab-forming portions 52 (see FIG. 5). The concrete may then be poured.

In certain instances, especially where vibratory devices are employed for concrete settling purposes, it may be found expedient to insure against dislodgment of the rod 14 from the cradles 22 under the influence of vibration or rod-floating by bending the wrap-around flaps 42 over the upper regions of the rod. This may be accomplished expeditiously by merely placing the foot against the upstanding wrap-around flap 42 of each chair assembly 10 as indicated at F in FIG. 5 and, by the application of foot pressure to the flap pushing the same from the approximately tangential position which it normally assumes with respect to the rod 14, to the position wherein it is shown in FIG. 6. In such an instance, the inturned portions 52 will bite into the metal of the rod 14 and cause the rod to be held securely within the cradle.

It is to be noted at this point that in the manufacture of the sheet metal cradle 22, the slitting thereof at 50 and the bending of the portions 52 out of the plane of the adjacent portion of the blank from which the cradle is formed may be accomplished in one operation, utilizing a single pair of stamping and severing dies. No excess or waste material is involved in the stamping operation. The sand plate 20 likewise may be formed by a single stamping operation. Because of these facts and because the chair assembly 10 is comprised of but the three parts and assembled by efficient welding operations, the assembly is one which may be manufactured economically in quantity at a low cost.

The invention is not to be limited to the exact arrangement of parts shown in the accompanying drawing or described in this specification as various changes in the details of construction may be resorted to without departing from the spirit or scope of the invention. Therefore, only insofar as the invention has particularly been pointed out in the accompanying claim is the same to be limited.

Having thus described the invention what I claim as new and desire to secure by Letters Patent is:

As a new article of manufacture, a three-part composite chair for maintaining a cylindrical, horizontally extending, reinforcing rod in fixed position over a subgrade in connection with a paving installation, said chair comprising a lower sand plate adapted to be supported upon the subgrade, an upper cradle, and an intermediate interconnecting leg support, said sand plate being in the form of a generally rectangular, elongated, sheet metal stamping having a pair of marginal upstruck reinforcing ribs along its side edges and, in addition, having a series of transversely extending upstruck ribs extending between said marginal ribs at each of its end regions, said leg support comprising a length of cylindrical steel rod stock bent to inverted U-shaped configuration and including a pair of downwardly and outwardly diverging legs and an interconnecting bight portion at the upper ends of the legs, the extreme lower ends of said legs being turned outwardly away from each other and providing a pair of horizontally extending foot portions, said foot portions being seated upon the respective series of transversely extend-

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ing ribs at the end regions of the sand plate respectively and being resistance-welded thereto, said upper cradle being in the form of a sheet metal stamping capable of deformation but possessing an appreciable degree of resilience, said latter stamping being bent medially of its ends to provide a U-shaped trough-like member having upwardly extending, spaced apart side portions and an interconnecting bight portion, the marginal side edges of one of said side portions being formed with a pair of horizontally aligned slits therein which extend inwardly from said side edges a slight distance, the metal of the last-mentioned stamping immediately above the slits being turned inwardly of the cradle confines to provide a pair of rod-engaging friction tabs, said side portions being adapted to yield laterally under the influence of the spreading action of the reinforcing rod as the latter is pressed downwards into the cradle to allow said friction tabs to move to overlying positions above the rod and into firm frictional contact therewith when the rod is in fully seated

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relation within the cradle, said bight portion of the cradle being seated upon the bight portion of the leg support with the axes of the two bight portions extending in parallelism, said two bight portions being resistance-welded together.

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