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3,196,764

REINFORCED CONCRETE HIGHWAY STRUCTURES

Filed May 22, 1961

3 Sheets-Sheet 1

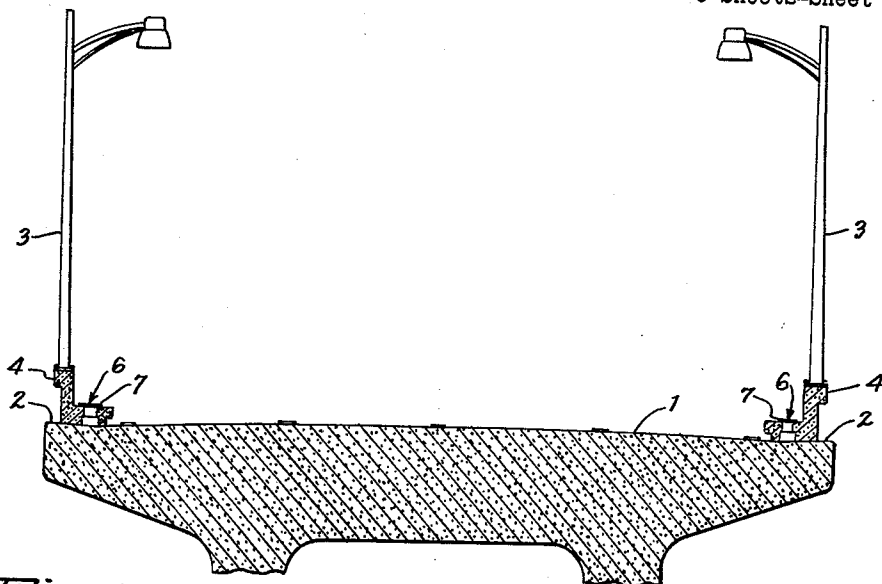


Fig. 1.

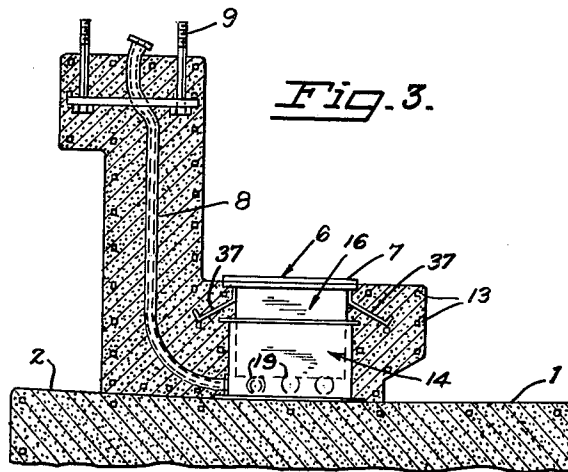


Fig. 3.

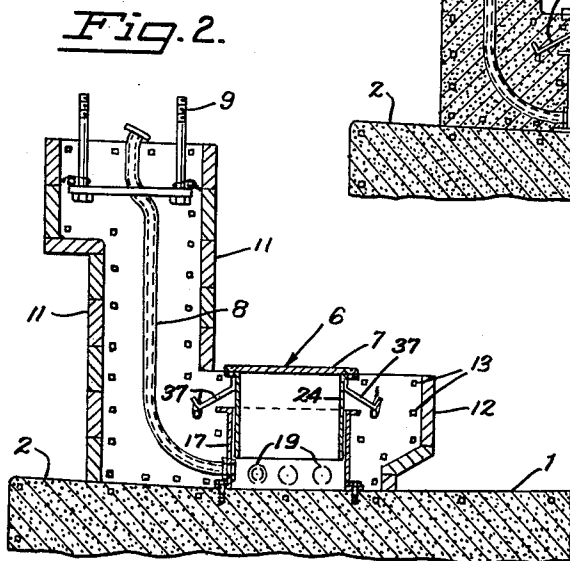


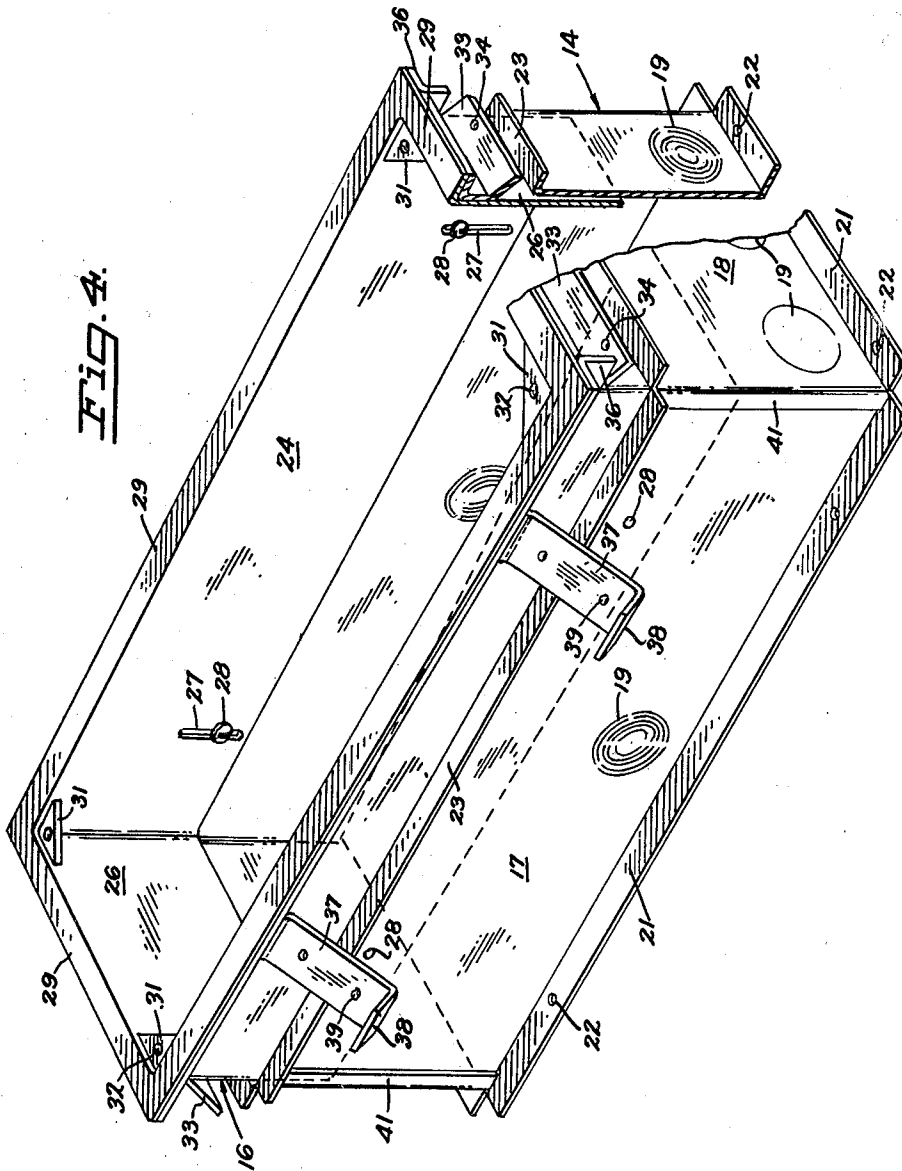
Fig. 2.

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3 Sheets-Sheet 2



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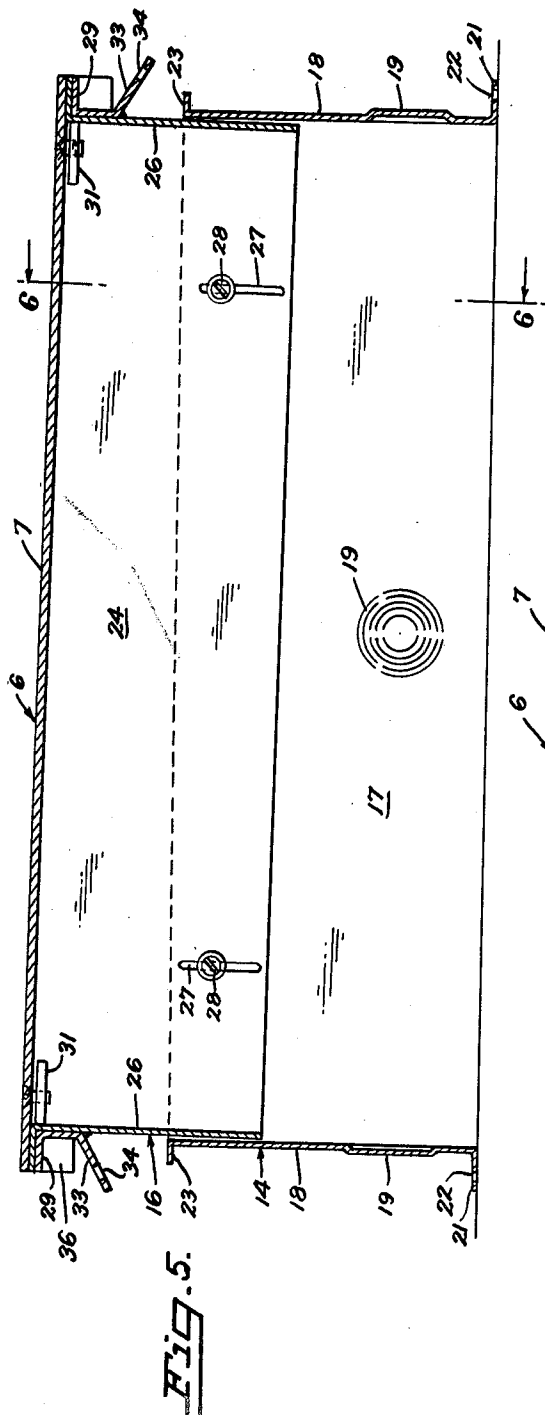
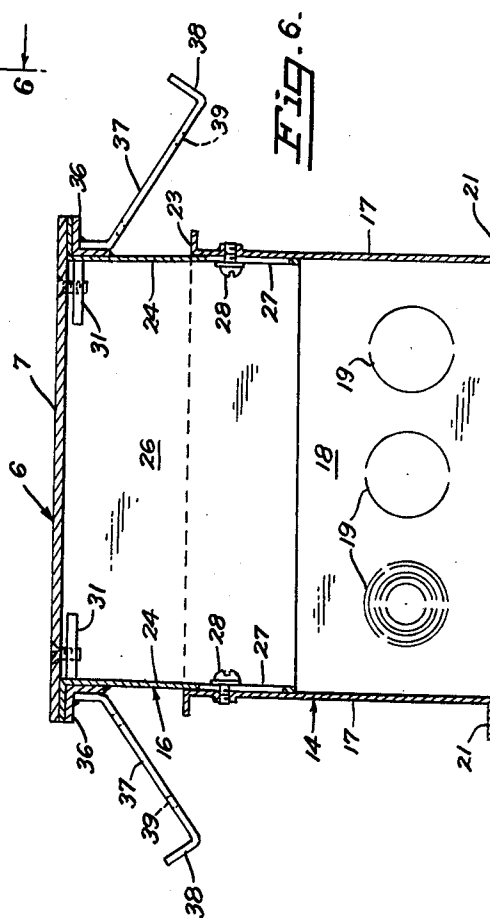
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REINFORCED CONCRETE HIGHWAY STRUCTURES

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3 Sheets-Sheet 3



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1

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REINFORCED CONCRETE HIGHWAY STRUCTURES

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1 Claim. (Cl. 94—31)

This invention relates to adjustable structural boxes for electrical connections in reinforced concrete highway structures.

In present highway work after the deck of the highway or road is constructed, usually electric light standards are provided along the margins of the highway. These electric standards are supported on concrete bases which also require boxes where the electrical connections and joints and electrical ballasts are accessible. Heretofore concrete boxes were provided which had the disadvantage that they did not permanently ground the conduits and which had to be cut to size to fit each installation so as to be level with respect to the deck of the highway and which were of considerable weight, difficult to handle and involved considerable breakage, and wherein the fastening inserts frequently became loose.

The primary object of the invention is to provide a metal box which is easily and quickly adjustable so as to conform to the level of the deck of a road and which can be speedily placed in position and secured to the forms so as to permit the completion of the rough work before the concrete pour of the light standard around the box and which also functions as a form for the pour, means being provided to securely anchor the adjusted box in the concrete so poured, and to facilitate the use of electrical conduits and connections, and provides space for electrical ballasts used in connection with the usual type highway lamps.

I am aware that some changes may be made in the general arrangements and combinations of the several devices and parts, as well as in the details of the construction thereof without departing from the scope of the present invention as set forth in the following specification, and as defined in the following claim; hence I do not limit my invention to the exact arrangements and combinations of the said device and parts as described in the said specification, nor do I confine myself to the exact details of the construction of the said parts, as illustrated in the accompanying drawings.

With the foregoing and other objects in view, which will be made manifest in the following detailed description, reference is had to the accompany drawings for the illustrative embodiment of the invention, wherein:

FIG. 1 is a somewhat diagrammatic cross-sectional view illustrating the positions of the light standards and the location of the boxes therein.

FIG. 2 is a cross-sectional view showing fragment of the deck of the highway and the form for pouring the concrete and showing the box in position anchored to the reinforcing elements of the concrete.

FIG. 3 is a cross-sectional view of the standard and a fragment of the road showing the concrete poured around the box.

FIG. 4 is a perspective view of the adjustable box.

FIG. 5 is a longitudinal sectional view of the box showing the adjusting means of the same and the temporary cover in position, and

FIG. 6 is a cross-sectional view of the box.

As shown in FIG. 1, in outline, the usual highway construction has a deck 1 for any suitable number of lanes for automobile travel. On the marginal or walk portion 2 along each edge of this highway are provided, suitably spaced from one another, electric light posts 3, each of which is supported on a concrete standard 4. At the base

2

of each standard 4 is provided an enclosure 6 with suitable removable cover 7 whereby access can be gained to the various joints, electrical connections and electrical ballasts supplying electricity to the lights 3.

As shown in FIGS. 2 and 3, one or more electrical conduits 8 extend from the connections in the box 6 through the standard 4 which are connected in the usual manner to the electrical conduits of the light. Each electric light post 3 is supported on suitable mounting bolts 9 extending from each concrete standard 4.

In order to form such concrete standard and bases the usual forms 11 are built to outline the concrete standard as well as forms 12 to outline the concrete base poured around the box 6. Usually reinforced concrete is used and there are spaced reinforcing bars 13 suitably supported in the form 12, to which the box 6 is anchored in the manner hereinafter described.

The improvement of the present is the provision of the particular type of adjustable box 6 to be imbedded in the concrete base.

The box 6 includes an outer or base portion 14 into which is adjustably telescoped a top portion 16 as particularly shown in FIG. 4. The base portion 14 has sides 17 and ends 18 provided with suitable knock-outs 19 for holes in suitable positions for the electrical conduits to be joined in the box 6.

The positions of the knock-outs 19 are such that they are uncovered by the telescopic top portion 16 even in the lowermost position of said top portion. From the lower edges of the base portion 14 extend outwardly base flanges 21 provided with suitable fastening holes 22. These flanges 21 are of sufficient width to permit the application of suitable tools for shooting the usual concrete nails through the holes 22 to fasten the base portion 14 of the box 6 to the concrete deck of the margin portion 2 of the highway 1. Also suitable flanges 23 extend outwardly from the upper edges of the base portion 14 parallel with the lower flanges 21 for added reinforcement and securing to the concrete, but these upper flanges 23 are narrower than the lower flanges 21. The base portion 14 is open both at its bottom and at its top.

The upper portion 16 of the box 6, which is also the inner portion, telescopes into the lower or base portion 14, has sides 24 and ends 26 and is of a rectangular shape so as to slidably fit into the rectangular base portion 14. In the opposite sides 24 of the upper portion 16 are provided vertically elongated slots 27 spaced from one another which are slidable over screws 28 threaded into the respective sides 17 of the base portion 14. Thus by suitably sliding the respective slots 27 over the respective screws 28 and then by tightening the screws 28 the slant or incline of the upper box portion 16 can be so adjusted that it conforms to the level of the deck. The clearance between the top portion and base portion is so determined as to permit both lateral and longitudinal tilting adjustment.

On the top edges of the sides 24 and ends 26 of the upper portion 16 are outwardly extended flanges 29. In each corner at the top of the top box portion 16 is provided a gusset plate 31 with a suitable screw hole 32 in each corner thereof for fastening the removable cover 7 in position.

On the outside of each end 26 of the top box portion 16 there is a downwardly and outwardly inclined anchor flange 33 provided with suitable holes 34 for fastening the same to the form or reinforcement in the position where the box is used. This flange 33 is the lower portion or skirt of an element of a generally U-shaped cross-section welded under the end flange and to the end 26 of the top box portion 16 as shown in FIG. 4 and FIG. 5. In this manner the top flanges 29 of the box are also suitably reinforced. Along each of the longitudinal side flanges 29 of the top portion 16 there is also a reinforcing

ing angle iron 36 welded in position from which extend, downwardly and outwardly, anchor hooks 37 each with an outward hook flange 38 and suitable anchor holes 39 for fastening to the form or to the reinforcing bars to hold the box in position.

The vertical end edges of the ends 18 of the lower box portion 14 are also turned over to the adjacent sides to form securing flanges 41 and reinforce the corners of the outer or base box portion 14.

In operation, the box 6 is placed upon the deck in suitable position as shown in FIG. 2. The anchoring flanges 33 and 37 respectively are secured and anchored to the reinforcements or to the form. The electrical connecting tubes for the electrical conduits are then connected. The top portion 16 is tilted to a suitable angle and inclined to conform to the level of the deck and then the screws 28 are tightened to hold the top box portion in the adjusted position. A temporary cover is placed over the box so as to allow the pouring of the concrete without spilling any of the concrete into the box. The base flanges 21 are bolted to the deck as heretofore described. Then as the forms 11 and 12 and reinforcing members 13 are in position, the rough work is completed and then the concrete is poured around the box. Finally the forms are removed leaving the box in position as shown in FIG. 3, permanently fixed in suitable position and at suitable level. Then the temporary cover is removed and the permanent cover 7, suitably marked, is placed in position.

The herein structure allows the electrical contractor to permanently ground the conduits into a permanent position without using other mechanical binders or grounds.

The box top portion 16 is adjustable to various angles, both longitudinally and laterally, and eliminates cutting the box to a height or angle as it was necessary with concrete boxes heretofore used. The electrical contractor can complete his rough work before the concrete is poured; the box is much lighter than the heretofore used concrete boxes and it does eliminate waste through breakage, and makes a clean, effective grounded installation resulting in a more economical ultimate installation than heretofore accomplished. The base portion 14 is made of galvanized metal and is provided with sufficient knock-outs to make it flexible for various positions. The use of the box herein described permits the placing of the box immediately adjacent to the standard or post instead of at a remote point from the standard and avoids the necessity for other complicated electrical conduits heretofore used. The top portion 16 is also made of galvanized

metal or the like, and is reinforced to a double thickness at the flanges for positively preventing the box from collapsing.

These boxes have long life and they accomplish great savings of time, labor and afford safety of operation over previous arrangements and devices heretofore used in such situations.

I claim:

In the method of erecting a concrete standard including a joint box for a light on the top of the deck of the margin of a roadway, the steps of

- (a) building a form on the top of the deck of the road to outline the standard and including a form for a joint box on one side of the standard form,
- (b) placing reinforcing elements within said forms,
- (c) placing a joint box of vertically telescopic lower and upper sections in the form for the joint box,
- (d) fixedly securing the bottom of the lower section of the box to the deck of the road within said form,
- (e) adjusting the telescoping top section of the box laterally and longitudinally on the bottom section so as to align the top edges thereof with the level of the top of the form for the joint box and securing said top section to said reinforcing elements,
- (f) connecting conduits to knockout holes of said bottom section,
- (g) placing a temporary cover on the top of said top section,
- (h) pouring concrete into the entire form and allowing it to set,
- (i) and replacing the temporary lid with a detachable permanent lid on the joint box.

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