

United States Patent

[11] 3,577,863

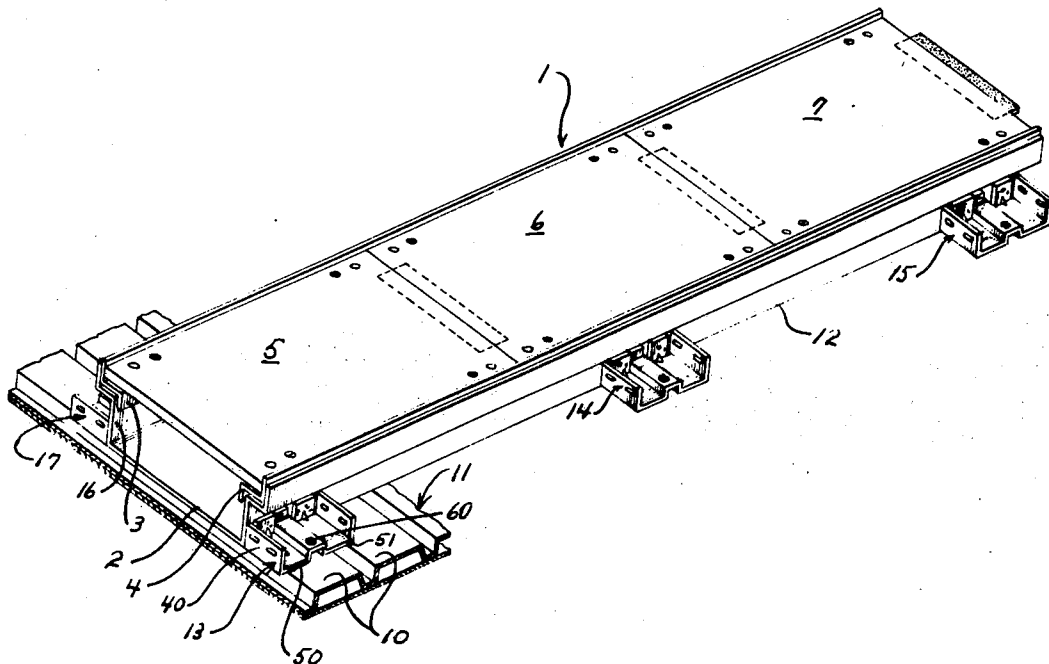
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| [21] | Appl. No. | 849,991 |
| [22] | Filed | Aug. 14, 1969 |
| [45] | Patented | May 11, 1971 |
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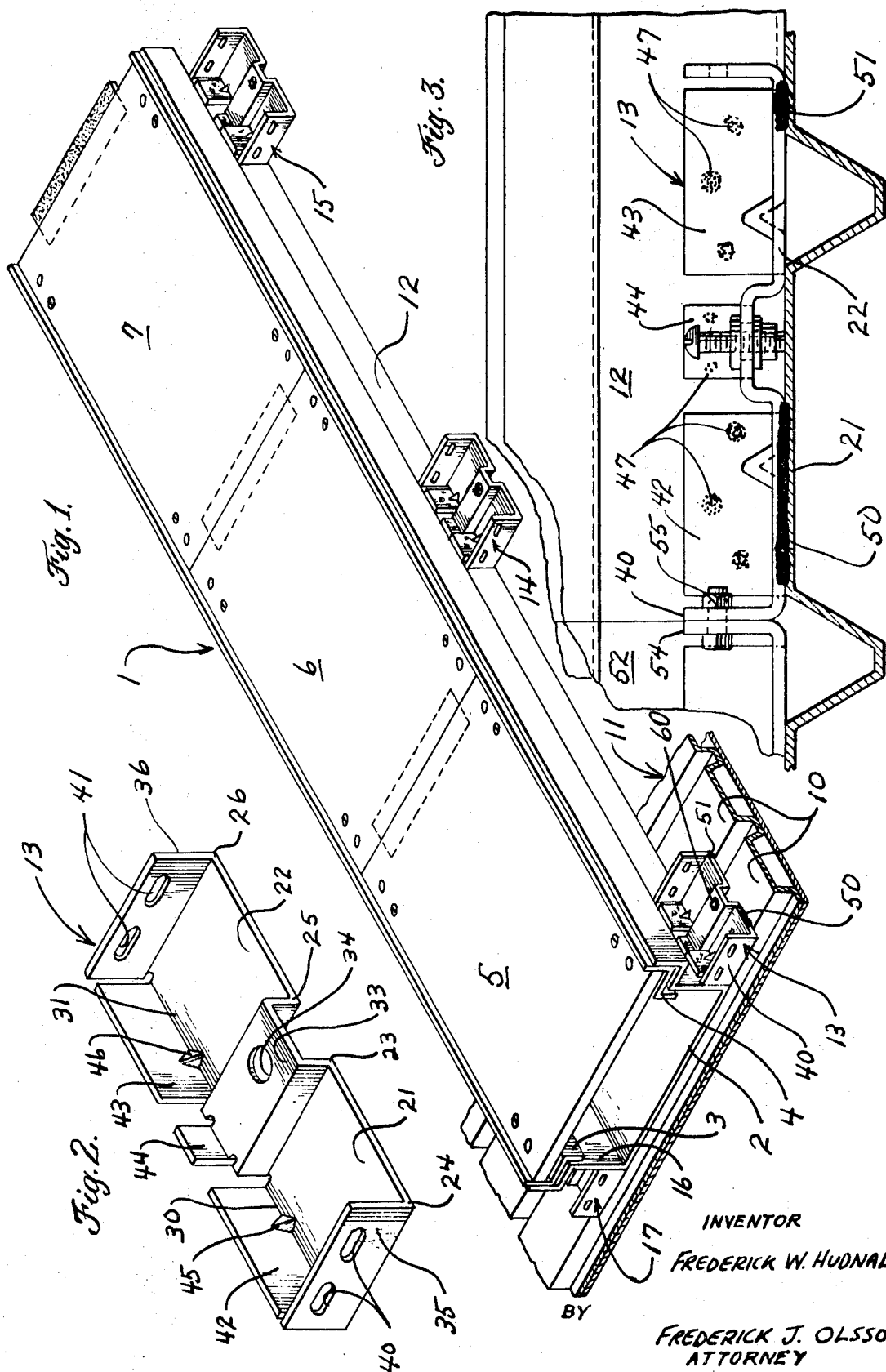
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- [54] TRENCH DUCT CONNECTING DEVICE WITH VERTICAL ADJUSTMENT MEANS**
4 Claims, 3 Drawing Figs.
- [52] U.S. Cl.**..... **52/220,**
52/122, 52/714, 285/406
- [51] Int. Cl.**..... **E04f 17/08**
- [50] Field of Search**..... **52/220,**
221, 122, 238; 174/48, 49, 101; 138/92; 285/64,
406

ABSTRACT: A device for installing trenchduct, the device having a bottom and three upstanding sides, one side securing the device to the trench by being welded thereto, the other two sides being used alternatively for coupling one trench to another and the bottom being used either to secure the trench to a cellular floor by being welded thereto or alternatively supporting a leveling lug when the trench is used over a concrete floor.





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TRENCH DUCT CONNECTING DEVICE WITH VERTICAL ADJUSTMENT MEANS

This invention, in general, relates to trenchduct for electrical underfloor distribution systems.

More specifically, the invention relates to a device having a special utility in connection with the installing of trenchduct on cellular floors, on concrete floors or on blended floors, the device being interchangeably useable for such type of floors.

The principal object of the invention is to provide a device of the kind in question characterized by a single unitary structure having a design so that a desired number of identical devices can be secured at different places on a trenchduct for respectively performing the function of joining adjacent trenches together, the function of securing the trench down against the top of cells when the same is used over a cellular floor and the function of leveling the trench when used over concrete floor.

The invention has special advantage to the producer by savings in manufacturing costs and advantage to the installer or contractor by savings in installation and repair costs.

The manner in which the invention is constructed and the various advantages thereof will be described and commented on below in connection with the following drawings wherein:

FIG. 1 is a perspective view of a typical trenchduct incorporating the invention;

FIG. 2 is a perspective view of the device of the invention;

FIG. 3 is a fragmentary view illustrating one of the connecting devices of FIG. 1 as used for coupling adjacent trenches.

In FIG. 1 the trench 1 has an elongated, horizontally extending channel 2. The reversible Z-shaped tile trim pieces 3 and 4 are mounted on the channel by means providing for adjustment in a vertical direction. The covers 5, 6 and 7 are supported on the tile trim and extend across the channel. The channel is mounted directly on the cells 10 of the cellular floor 11. The foregoing structure is conventional.

Along the wall 12 of the trench are a plurality of connecting devices 13, 14 and 15. The opposite wall 16 has similar devices one of which is indicated at 17.

The connecting devices are all identical in structure, the details of which are shown in FIG. 2 for the connecting device 13.

The device is formed preferably from mild sheet steel and is either 12 of 14 gauge.

The bottom of the device is comprised of a pair of the flat, rectangular-shaped, spaced-apart mounting plates 21 and 22. The plate 21 has an inner edge 23 and an outer edge 24. The plate 22 has an inner edge 25 and an outer edge 26. The inner edges 23 and 25 face one another. The plate 21 has a side edge 30 and the plate 22 has a side edge 31. The plates 21 and 22 are identical in shape and size.

A rectangular-shaped bridge 32 is connected to the inner edges 23 and 24 and extends across the space between the plates. The top 33 of the bridge is spaced above the plates 21 and 22. The top has an aperture 34 which is adapted to hold a Riv-nut or a nut and bolt retainer for purposes of holding a leveling lug as will be explained later.

Extending up from the outer edge 24 is a coupling flange 35 and extending up from the outer edge 26 is a coupling flange 36. The coupling flange 35 has apertures 40 while the coupling flange 36 has apertures 41. The coupling flanges 35 and 36 and the apertures 40 and 41 are identical in shape and in size. Both of the flanges 40 and 41 are normal to the plates 21 and 22.

Extending upwardly from the outside edge 30 is a welding flange 42 and connected to and extending up from the outside edge 31 is a welding flange 43 which preferably is the same size and shape as flange 42. The top 33 of the bridge 32 also has a welding flange 44. The flanges 42 and 43 are normal to the plates 21 and 22 and the flange 44 is normal to top 33.

In cases where the connector is made from 14 gauge metal I provide bosses at the intersection of the welding flanges and mounting plates, for example, the bosses 45 and 46. With 12 gauge I found the boxes to be unnecessary. The purposes of the boss is to give strength and rigidity and to maintain the

normal relationship between the upstanding welding flanges and the mounting plates.

The foregoing described structure provides for a connecting device which is universally applicable to a trench to perform any of the required functions either on cellular or on concrete floors.

The welding flange 42, 43 and 44 are used for securing the device to the sides of the trench.

Preferably this is done during manufacture by spot welding in several positions on each flange. For example in FIG. 3 the flanges 42, 43 and 44 of the connecting device 13 are spot welded to the side 12 as by the welds indicated at 47.

For rigidly connecting the trench to the cellular floor the mounting plates are 21 and 22 welded to the top of the cell. For example in FIG. 3 it will be observed that the plates 21 and 22 are welded in by the fillet welds 50 and 51. The same fillets are shown in FIG. 1.

In the embodiment shown in FIG. 1 the connecting devices 14 and 15 on the side 12 of the trench and their counterparts on the opposite side 16 of the trench are all welded to the cells in the same manner as described for the connecting device 13. This insures that the trench is firmly down in engagement with the top which is required for approved installations particularly since in many cases the trench bottom has access holes in communication with a cell which is used as a conductor or cable raceway.

Incidentally, the following is to be observed in welding up the connecting devices to the trench it is important that the bottom mounting plates be flush or aligned with the bottom of the trench in order that the device will properly seat the trench on the cells of a cellular floor.

For coupling adjacent trenches together, pairs of connecting devices are positioned on the ends of the trenches so that when the trenches are placed in position corresponding coupling flanges about one another and are bolted together. For example in FIG. 3 the trench 1 has the connecting device 13 and the trench 52 has connecting device 53. The coupling flange 40 of the device 13 abuts the coupling flange 54 of the device 52. The two flanges are held together as by the nut-bolt 55. The opposite side of the trench has an identical arrangement.

The trench with the connecting devices installed as described above is suitable for use over concrete without change except for the addition of leveling lugs. In this connection it is to be noted in FIG. 2 that I have shown the aperture 34 of the device 13 without a Riv-nut or a nut-bolt retainer while in FIG. 1 I have shown the device 13 (and the devices 14 and 15) with Riv-nuts installed in the apertures of the bridges and conditioned to receive leveling lugs of conventional form.

The trench may be supplied with the Riv-nuts or nut-bolt retainers already installed or alternatively the trench can be supplied without any Riv-nut or equivalent device and in such instances on-the-job installation of nut-bolt retainer or other equivalent means is contemplated.

The fact that the trenches are applicable either for cellular floors or for concrete floors simply by the addition of a leveling lug is of special advantage in blended floor situations. From the manufacturer's standpoint the structure eliminates any necessity for supplying trenches which have special brackets in order to make the trench compatible with the type of floor. From the contractor's standpoint the structure eliminates any likelihood that the contractor will have to make special provisions for mounting the trench in the event during the construction there is some change in the design or because the trench as received from the manufacturer is not properly customized to the type of floor.

The boxlike structure of the connecting device and especially the structure of the bridge provides for maximum strength. This is of particular importance where the trench is used over concrete floors inasmuch as after the trench is leveled it is likely to receive heavy loads not only from workmen walking on the trench but from wheelbarrows, cement carts and the like being pushed over the same. It often hap-

pens that with conventional arrangements for trench leveling, the loads imposed are severe enough to cause collapse and as a consequence extensive repairs have to be made by the contractor. The load-bearing qualities of the connectors of the invention is more than double the load-bearing qualities of conventional leveling means.

The combining of the coupling function, the leveling function and the welding function into a single unitary piece universally useable piece is of special advantage to the manufacture in that by a single operation of welding a device on the side of a trench there is provided a single means capable of performing multiple functions. The conventional manner of providing mechanism for coupling, leveling and welding contemplates at least three separate bracket means all of which must be welded to the trench in three separate operations.

I claim:

1. A unitary connecting device for use in installing trenchduct on cellular, concrete and blended floors, the device being made from metal and being formed so as to have:
 - a pair of flat, rectangular-shaped, spaced-apart mounting plates to be disposed on the top of cells of cellular floor and welded thereto or alternatively to be disposed over the surface of a concrete floor and leveled with respect thereto, each plate having an inner edge, an outer edge and a side edge extending therebetween with the inner

- edges facing one another;
- a pair of welding flanges respectively connected to said side edges and extending normally upwardly from said mounting plates, the flanges being for use in welding the device to the side of a trench;
- a bridge connected to said inner edges and extending over the space between the plates with the top of the bridge being spaced above said mounting plates, the top having an aperture for use in retaining a nut to accept a leveling screw for use when the device is over a concrete floor; and
- a pair of coupling flanges respectively connected to said outer edges and extending normally, upwardly, from said mounting plates, each coupling flange having aperture means for accepting coupling bolts when the device is used for coupling adjacent trenches together;
2. A construction in accordance with claim 1 further including at least one boss at the intersection of each mounting plate and its welding flange.
3. A construction in accordance with claim 1 further including a welding flange on said bridge and extending upwardly in the same direction as first said welding flanges.
4. A construction in accordance with claim 1 further including a nut in said aperture.

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