

May 29, 1923.

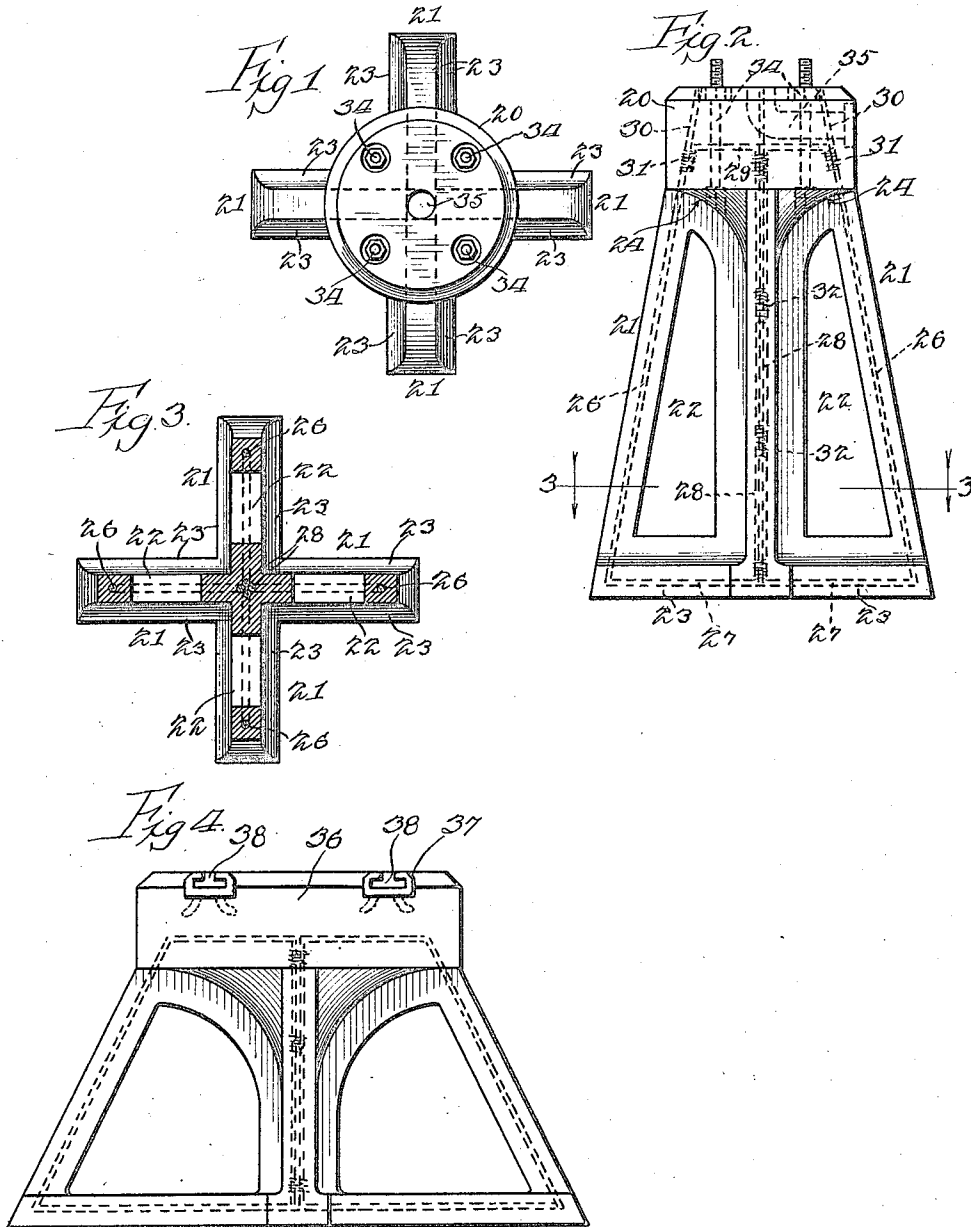
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J. M. FITZ GERALD

FOUNDATION PEDESTAL OR PIER

Filed Feb. 9, 1920

3 Sheets-Sheet 1



Witness:
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Inventor:
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May 29, 1923.

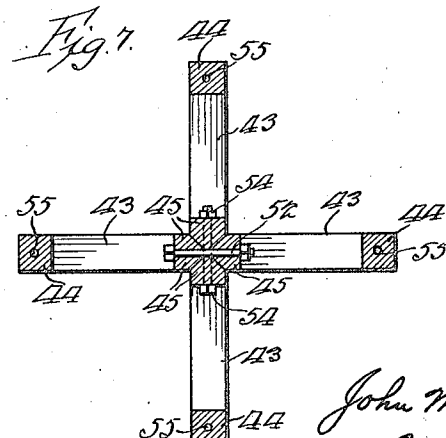
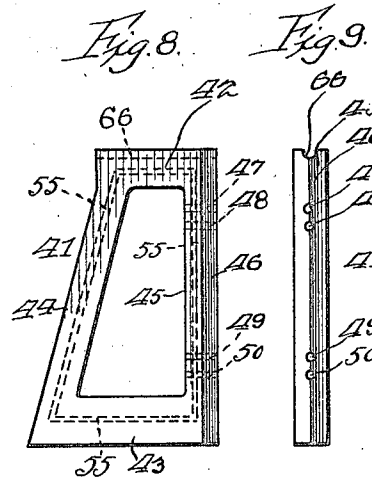
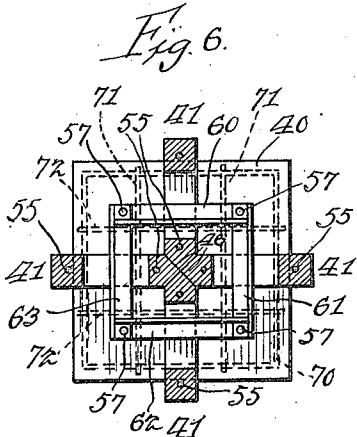
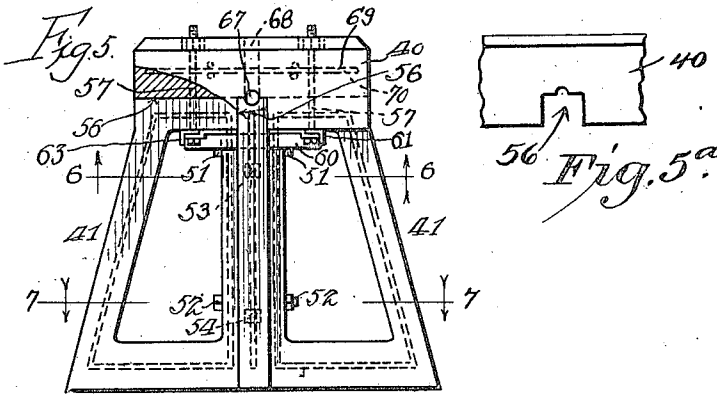
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

Fig. 10

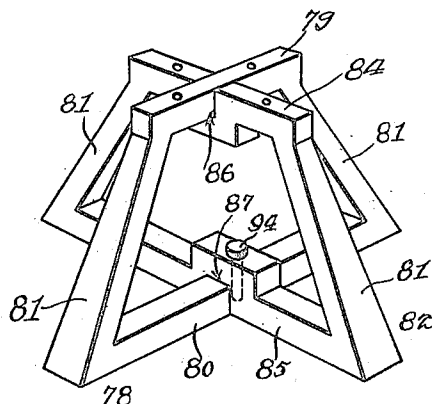


Fig. 11^a

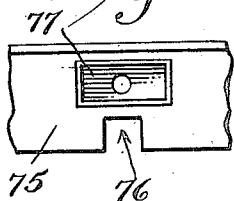


Fig. 11

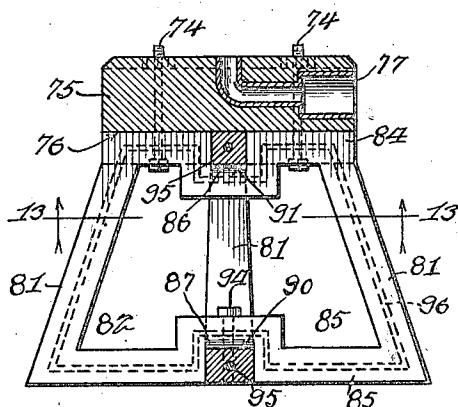


Fig. 12

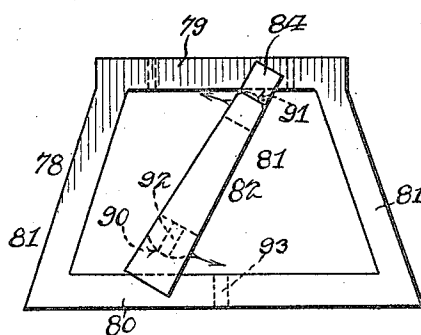
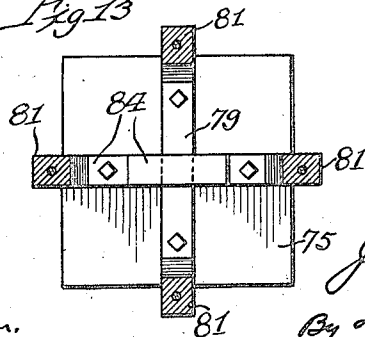


Fig. 13



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UNITED STATES PATENT OFFICE.

JOHN M. FITZ GERALD, OF RIVER FOREST, ILLINOIS.

FOUNDATION PEDESTAL OR PIER.

Application filed February 9, 1920. Serial No. 357,268.

To all whom it may concern:

Be it known that I, JOHN M. FITZ GERALD, a citizen of the United States, and a resident of River Forest, Cook County, Illinois, have invented certain new and useful Improvements in Foundation Pedestals or Piers, of which the following is a specification.

My invention relates to piers or pedestals for supporting an upright pole or mast rigidly in the ground, or for sustaining any other suitable device thereon.

The principal objects of these improvements are to provide a strong and rigid pier or pedestal which will afford notably great resistance to deflecting forces applied to the superstructure, such as a mast, and to forces tending to cause the pier or pedestal to move horizontally in the ground, as where it carries longitudinally-moving signal rods used in railway construction. A prime object is to provide a pier or pedestal of relatively light weight, containing a relatively small amount of material, and which is, nevertheless, very strong and durable. Another important object is to provide a device of this kind which may be installed easily and expeditiously, and by a few workmen. A further object is to provide a form of device which is of simple construction, and, in the case of the sectional piers shown, one which includes a plurality of pieces of the same or similar form and construction whereby both the manufacture and installation of the device are simplified and cheapened.

The concrete piers and pedestals heretofore in general railroad use have been solid and consequently of great weight, and, whether they were made, shipped and installed as a monolith or whether they were formed in situ along the right-of-way the work of installation has called for a large force of men and other great expense.

An important objection to the solid pier or pedestal is the difficulty of leveling it after it is positioned in the receiving hole in the ground, and also the difficulty of tamping under it to give it a solid resting place. In these improvements I have provided a form of pier which is peculiarly simple and easy of installation, which can be leveled and otherwise adjusted with ease and expedition, which provides a materially large amount of space for the workmen, which admits of easy tamping under the lower reaches

or sole-extensions of the frame parts, and which can be embedded with great solidity in the earth as the filling-in process proceeds, all with little effort and expenditure of time.

In the accompanying drawings, which form a part of this specification,

Figure 1 is a top view of a preferred form of monolithic structure for supporting signal masts and the like;

Fig. 2 is an elevation thereof;

Fig. 3 is a horizontal section on the line 3—3 of Fig. 2;

Fig. 4 is an elevation of a monolithic form appropriate for supporting signal rods in railway work;

Fig. 5 is an elevation of a sectional construction on the general plan of the monolithic structure of Fig. 1;

Fig. 5^a is a fragmentary view of the top or table of Fig. 5 showing any of its sides;

Figs. 6 and 7 are horizontal sections on the lines 6—6 and 7—7 respectively of Fig. 5 viewed respectively in the directions of the arrows;

Fig. 8 is a side elevation and Fig. 9 is an edge view of any one of the four lower sections of the device of Fig. 5;

Fig. 10 is a perspective view of the lower frame work of a modified form of device;

Fig. 11 is a view showing this last mentioned modification with the table in medial vertical section, one of the frame-like parts in side view and the other thereof in section;

Fig. 11^a is a fragmentary side view of the table of Fig. 11;

Fig. 12 shows how the two frame-like parts of Fig. 10 are assembled; and

Fig. 13 is a horizontal section of the device of Fig. 11 complete on the line 13—13 of Fig. 11 viewed in the direction of the arrows.

The device of each of the figures illustrated is of reinforced concrete, which is strong, provides a relatively light-weight device when in the shapes shown, is durable, and, moreover, is relatively cheap. The invention is not limited, however, to concrete construction.

Referring to Figs. 1, 2 and 3 the device comprises a horizontal top or table portion and a plurality of downwardly extending vertically disposed anchoring elements. These anchoring elements are substantially vane-like in general effect, and are

spaced apart, with edge portions directed outwardly forming V-shaped recesses between the adjacent vanes or anchors, which recesses are open outwardly at side portions of the device and downwardly at the bottom. I have shown openings 22 in these anchoring elements, thus materially lightening the construction as well as providing for a strong interlocking effect between the packed earth and the several adjacent parts of the anchors; but many of the advantages of the device could be realized if these openings 22 were not present, and my description "vane-like" includes such solid members.

I provide lateral extensions 23 at the lower portions of these anchors 21 respectively constituting soles or feet which give a more secure footing upon the ground and also provide resistance against uplifting strains when the device is in use.

The under surface of the top or table 20 is preferably slanted upward and outward, as at 24, to provide against the uplifting of the pedestal when the ground swells due to frost, such surfaces providing for the easy movement of the earth along the surfaces 24 and thus avoiding any material lifting of the pier.

In forming the device of Figs. 1, 2 and 3 I first make a plurality of frames of reinforcing iron, each frame having an outer member 26, a bottom member 27, an inner upright member 28, and an upper member 29, the outer member 26 extending upward at 30 to form a stop or rest for spacing the frame in the mold, the frame being made a rigid structure by wiring as at 31. The four frames are bound together by wire, as at 32, and this bound-together reinforcing iron is then inverted and placed in a casting form or mold and the concrete filled in from what is normally the bottom portion of the device, that is to say, the device is cast in inverted position. I also provide cores for the bolt holes 34 and for the trunking conduit 35. Any approved method of casting or of mold construction may be used.

Referring to Fig. 4, the top or table 36 may be considered rectangular in top view instead of circular as shown in Fig. 1. This device has the same kind of parts and interior reinforcing as those already described for the device of Fig. 1. Its chief difference is in the provision of means for holding a bolt adjustable laterally on the top or table, and shows the application of the device to a different use. These bolt-holding means are shown as a metallic element 37 having the recess 38 adapted to accommodate the head and shank of the bolt for lateral movement. The slotted part 37 is embedded in the cement at the time the device is formed.

Referring to Fig. 5 the device as a whole is quite similar to that of Fig. 1, but it comprises a plurality of sections instead of being a monolith. It includes top or table section 40 and a plurality of lower anchoring sections 41. The four sections 41 shown are identical with each other and can therefore be made from the same mold, and no selection is required when they are sold, shipped, distributed along the right-of-way, or when assembled for use. Each section 41 includes an upper horizontal member 42, a lower horizontal member 43, an outer leg member 44 rigidly connecting the top and bottom members and an inner vertical connecting member 45. The inner member 45 is formed with a projecting V-shaped ridge 46, clearly shown in Fig. 6, formed with an angle of forty-five degrees between its sides whereby these parts 46 of the four sections interfit with each other and form a tight joint when bolted together. For this bolting I provide (by coring) a pair of spaced-apart upper bolt holes 47 and 48 and a pair of lower spaced-apart bolt holes 49 and 50. In Fig. 5 bolts 51 and 52 extending in one direction are shown in the bolt holes 47 and 49 respectively, while bolts 53 and 54 (dotted) extending at right angles to the direction of the other bolts are shown in the bolt holes 48 and 50 respectively. Each section 41 has a ring-like structure of reinforcing iron 55 embedded therein. These sections may be made in a horizontally disposed open-top mold. The top or table 40 of the device of Fig. 5 is shown as rectangular and its bottom part is provided with a plurality of upwardly extending recesses 56 which cross each other and are, in short, a counterpart in female form of the upper portions 42 of the sections 41 when the sections are bolted together, and the parts 42 fit into these recesses 56 respectively.

The sections 41 may be lowered one by one into the hole in the ground prepared for receiving the pedestal and there bolted together and leveled, and then the top or table 40 may be lowered upon this frame-like structure with the upper ends 42 thereof projecting into the recesses 56, and thereupon the upper and lower structures may be rigidly secured together by means of bolts 57 extending through aligning holes cored in the upper and lower parts as shown. Angle irons 60, 61, 62 and 63 span the parts 42 respectively and preferably engage the parts 42 while the ends of the irons are still free from the under surface of the top section, thus providing a strong clamping action for the bolts 57. The top and bottom elements are thus locked together with an exceedingly strong and rigid connection.

In order to conduct the trunking wires from outside the device to the center of the

top or table portion so as to be led therefrom to the hollow signal mast I form a channel-like recess 56 in the top of each of the lower sections 41 and a corresponding recess in the upper surfaces of the recesses 56, thus forming a pair of channels 67 (Fig. 5) extending from side to side of the device and intersecting each other in the middle of the table 40. A cored vertical hole 68 in the table connects with these holes 67 and thus the wires may be led in from any or all of the four directions of these holes 67.

I reinforce the top or table 40 by means of a plurality of metallic rings 69 and 70 and a plurality of transverse wires 71 and 72.

Referring to Figs. 10 to 13 inclusive the top or table 75 may be considered substantially the same as the table 40 having bottom recesses 76 well shown in Fig. 11^a. The trunking wires may enter through a trunking device 77 in the form of a casting embedded in the concrete. The sub-structure or anchoring frame-like parts beneath the table 75 are secured in the recesses 76 by bolts 74 after the manner of securing the corresponding parts together in the device of Fig. 5.

The chief distinguishing feature in the device of Fig. 10 is in the form of the anchoring elements depending from the top. It will be noted that these are of two kinds. The frame-like part 78 is a ring-like structure having a continuously extending top portion 79, a continuously extending bottom portion 80 and lateral upright connecting members 81. The frame part 82 has corresponding upright members 81 but the horizontal members 84 and 85 are notched at 86 and 87 respectively to accommodate the upper member 79 and the lower member 80 respectively of the frame part 78. To provide the notches mentioned the upper and lower members of the frame 82 are offset in the middle as shown.

Fig. 12 shows how the two frame sections 78 and 82 are assembled. In order that the section 82 may come into the vertical position and form a tight fit with the frame 78 I round the surfaces 90 and 91. Aligning bolt holes 92 and 93 accommodate the pin 94 and thus relative movement of the two frames is avoided at the bottom thereof. Relative movement is overcome at the top by means of the bolts 74. There is thus formed an exceedingly rigid structure which is of light weight, of only three main parts, and of parts which can be made, shipped and assembled at relatively small expense.

The frames 78 and 82 may be made in horizontally-disposed open-top molds. After the molds are about half filled the ring-like frame 95 or 96 of reinforcing iron is inserted, as are also the cores for the several bolt holes, and thereupon the mold may be filled with cement and smoothed off with a trowel.

I claim:

1. A foundation pier of the character described comprising a normally horizontal top or table portion, and a plurality of spaced-apart substantially vertical anchors rigid with the top or table portion and extending downward and outward from the under-surface thereof and defining a substantially horizontal base formed by the bottom portions of the anchors, the anchors being relatively long at the bottom so as to cover a relatively great area, the adjacent anchors providing recesses between them which open outwardly at the side portions of the device and which also open downwardly at the bottom thereof to provide space between adjacent anchors for filling and tamping under them respectively.

2. A foundation pier of the character described comprising a normally horizontal top or table portion, and a plurality of spaced-apart vane-like anchors rigid with the top or table portion and extending downward from the under-surface thereof, the adjacent anchors providing recesses between them which open outwardly at the side portions of the device and downwardly at the bottom thereof, the anchors lying in substantially vertical planes which cross each other at the middle portion of the top or table, there being a materially large opening through the anchors respectively whereby adjacent of said recesses are in communication with each other.

3. A foundation pier of the character described comprising a normally horizontal top or table portion, and a plurality of spaced-apart vane-like anchors rigid with the top or table portion and extending downward from the under-surface thereof, the adjacent anchors providing recesses between them which open outwardly at the side portions of the device and downwardly at the bottom thereof, the anchors lying in substantially vertical planes which cross each other at the middle portion of the top or table and being relatively long at the bottom in the outward directions and forming a substantially horizontal base, the lower portion of the vanes respectively having lateral extensions in the substantially horizontal direction to provide resistance against uplifting forces when in use.

4. A sectional foundation pier of the character described comprising a horizontal top or table portion and a plurality of anchoring elements, with means for holding the anchoring elements rigidly to the top or table portion so as to extend downward therefrom, each anchoring element comprising a continuous structure having a substantially vertical inner member, a substantially horizontal top member, a substantially horizontal bottom member and an outer member connecting the ends of the top and bottom mem-

bers, means for holding the inner members rigidly together with the lower members forming substantially V-shaped recesses between adjacent ones thereof, and means for holding the upper members rigidly to the top or table portion.

5. A sectional foundation pier of the character described comprising a normally horizontal top or table portion having recesses in the under-surface thereof for accommodating anchoring elements therein, a plurality of anchoring elements each having substantially horizontal top and bottom members and side members connecting the top and bottom members, the top members projecting into said recesses, means for holding the anchoring elements rigidly to the top or table portion, and means for holding the anchoring elements rigidly together, the anchoring elements being spaced apart at their outer portions and providing substantially V-shaped recesses open at the bottom between adjacent ones thereof.

6. An anchoring section for a foundation pier comprising an element having a substantially horizontal top member, a substantially horizontal bottom member, and spaced-apart upright members connecting the top and bottom members forming substantially an open frame, with means for connecting the section to a top or table portion, and

means for connecting the section to a similar anchoring section.

7. A sectional foundation pier of the character described comprising a plurality of vane-like anchor sections, each having a top part and a bottom part, means for holding the anchor sections rigidly together with the sections extending away from each other from a common locality to define between each adjacent two thereof a recess which opens outwardly and downwardly, a top or table portion adapted to rest upon the top part of the anchor sections respectively, and means operable from above the top or table portion for securing said portion rigidly to the sections.

8. A sectional foundation pier of the character described comprising a plurality of anchoring elements, each having an upper part adapted to support a top or table member, means for holding the anchoring elements together in a rigid structure which may be embedded bodily in the ground with the upper parts thereof exposed, a top or table member having its under surface formed to interfit with the upper parts of the anchoring elements respectively, and means operable from above the table for holding the table rigidly upon the anchor elements.

JOHN M. FITZ GERALD.