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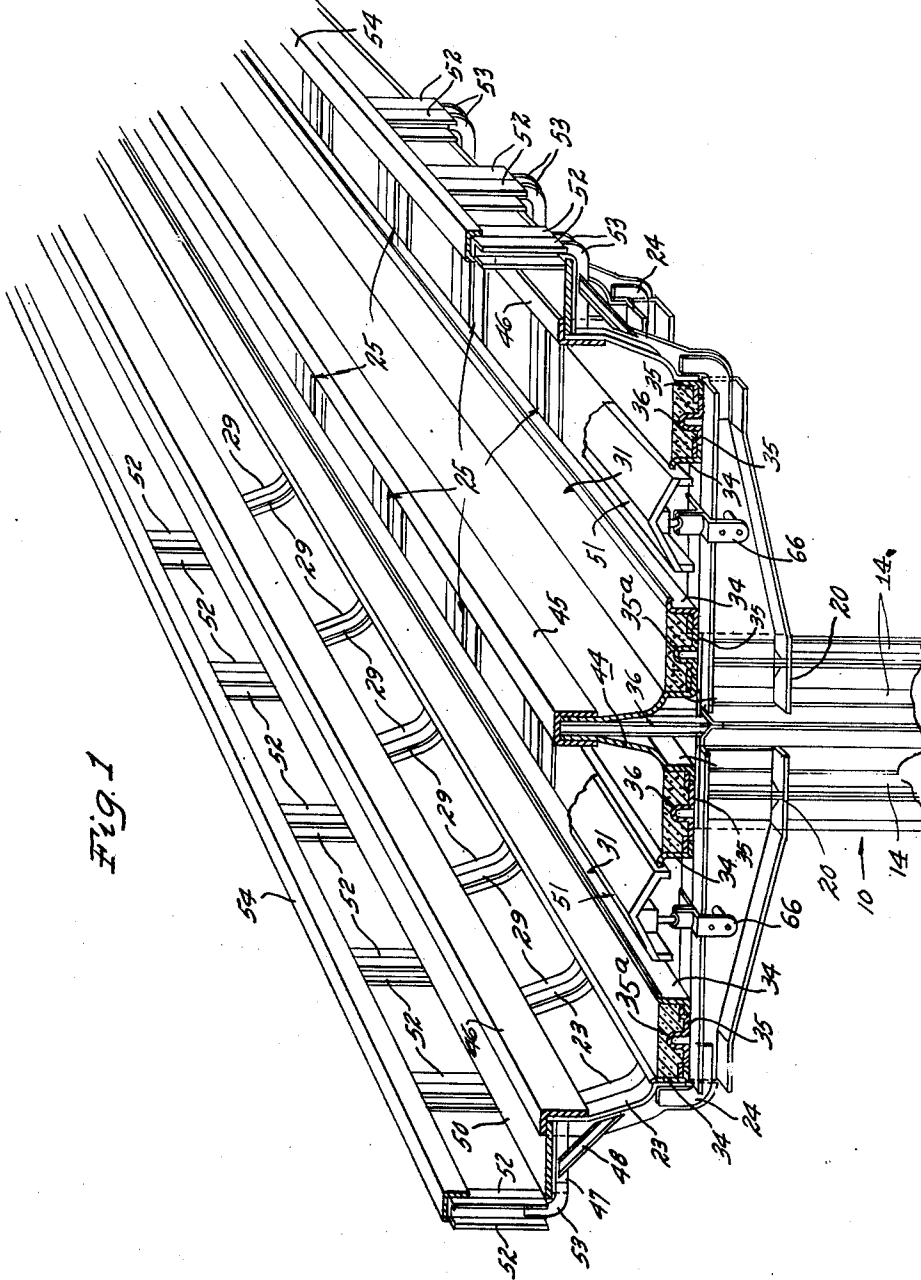
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RAPID TRANSIT ELEVATED STRUCTURE

Filed March 11, 1939

5 Sheets—Sheet 1



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5 Sheets-Sheet 2

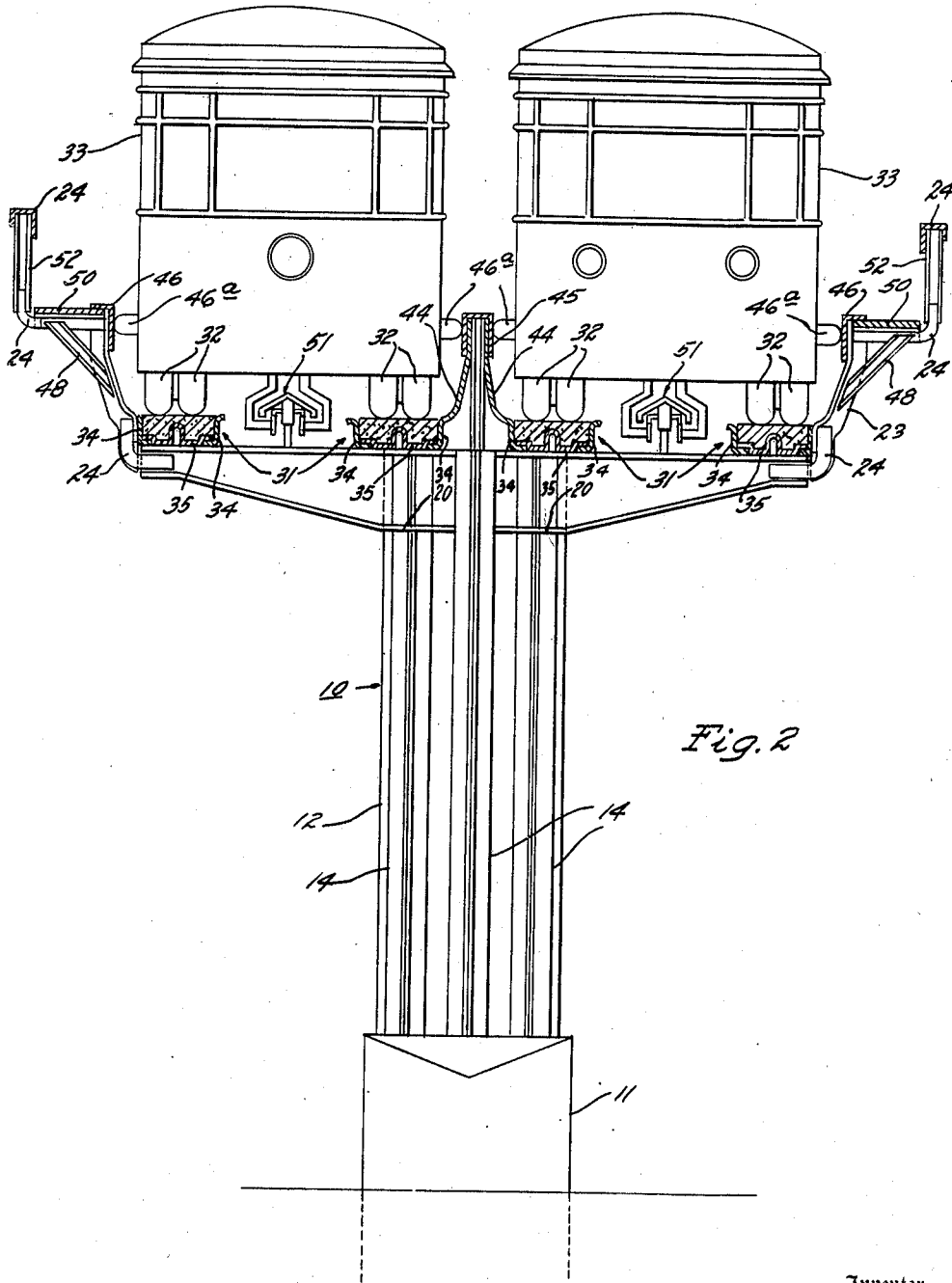


Fig. 2

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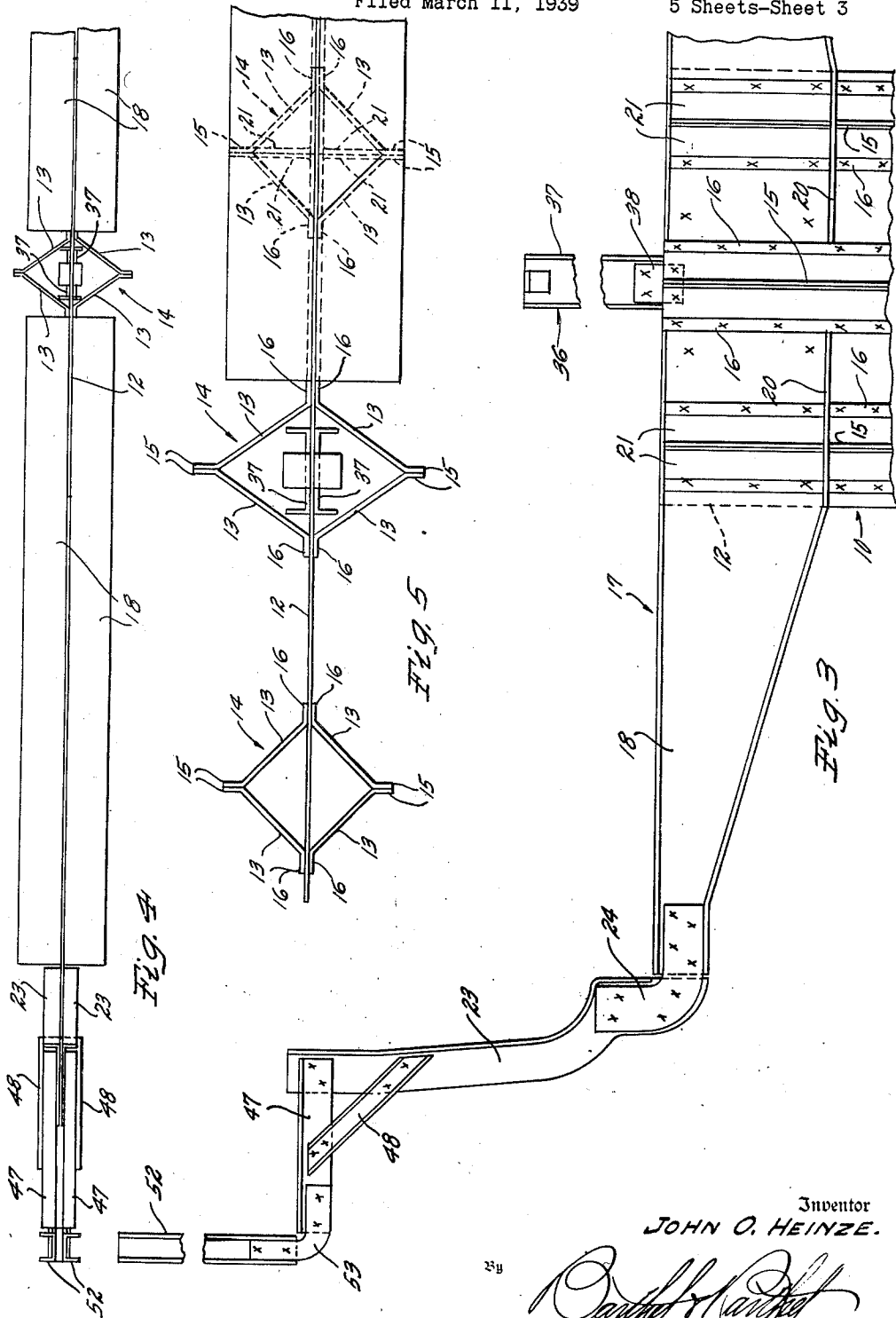
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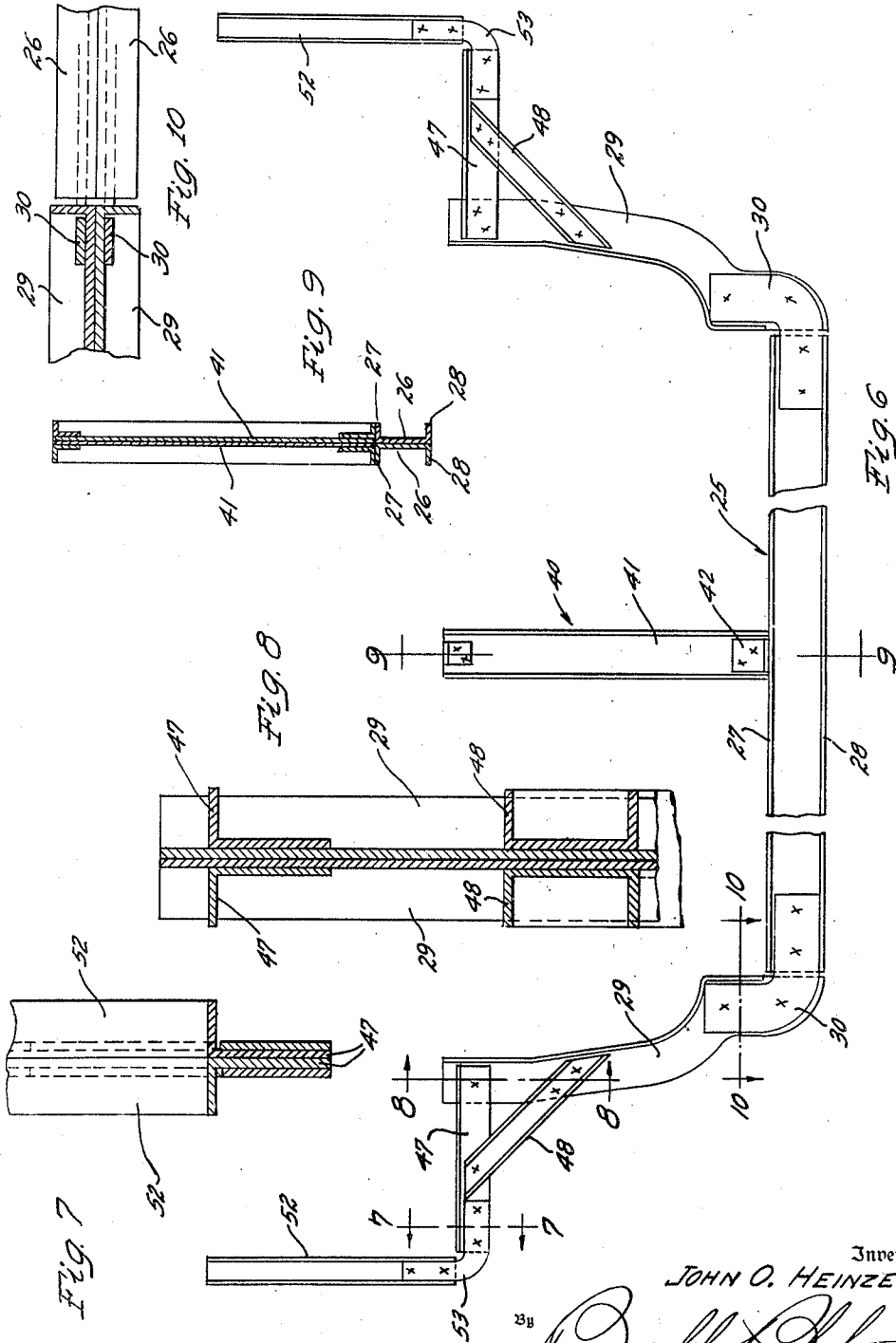
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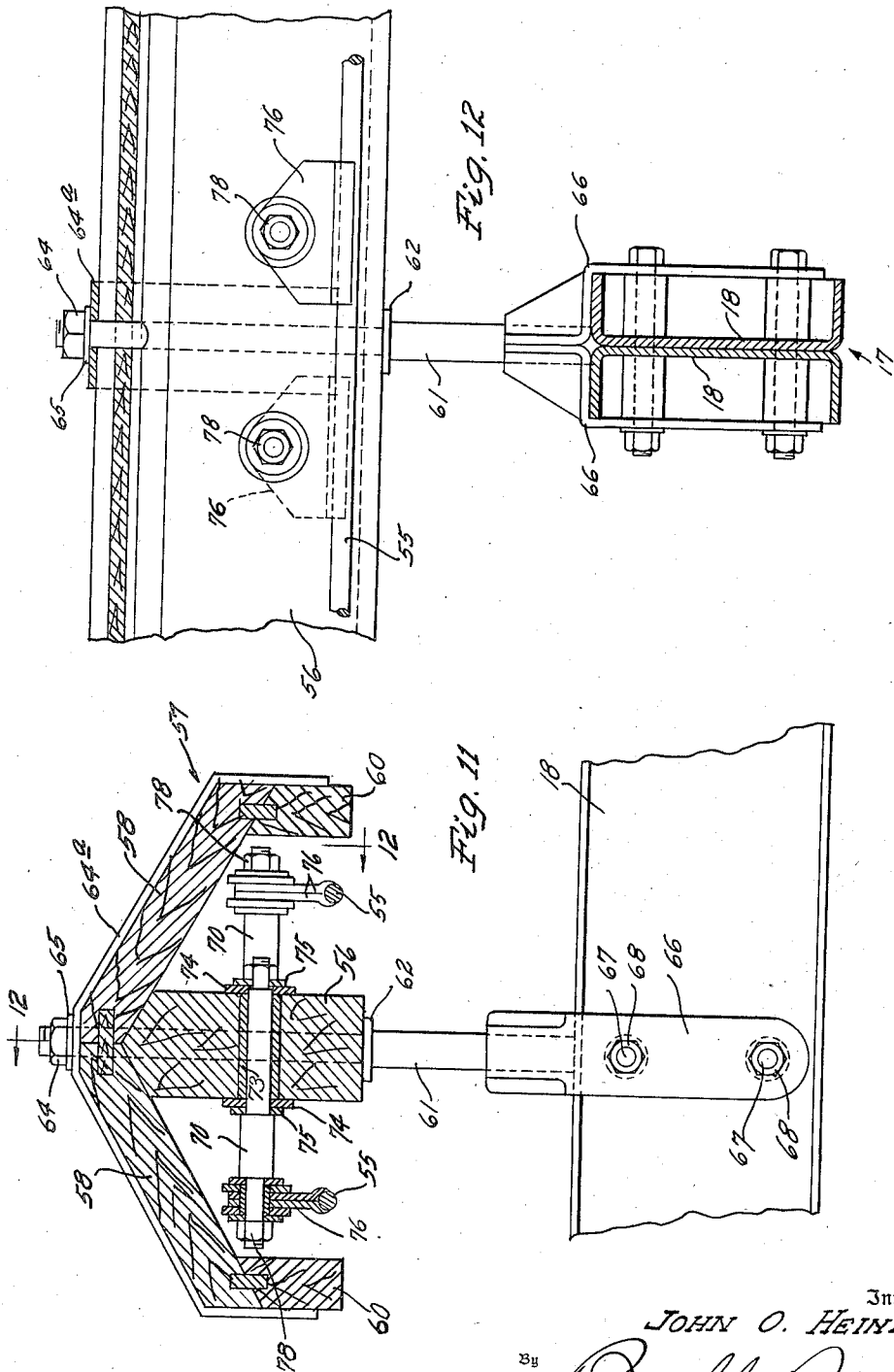
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RAPID TRANSIT ELEVATED STRUCTURE

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RAPID TRANSIT ELEVATED STRUCTURE

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Application March 11, 1939, Serial No. 261,176

3 Claims. (Cl. 104—124)

This invention relates generally to elevated structures for rapid transit systems and more particularly to elevated structures for electrically operated motor coaches or buses.

It is an object of the invention to provide a novel elevated structure for buses.

More particularly it is an object of the present invention to provide an elevated structure for buses, which is inexpensive to manufacture and construct compared to such structures of the past and yet is strong and durable.

A further object of the invention is to provide an elevated structure which will occupy a minimum of street space, will not block out sunlight and one which will not rumble, vibrate or cause other noises so that operation of buses thereon will be substantially noiseless.

Other objects of the invention will become apparent from the following description taken in connection with the accompanying five sheets of drawings in which—

Figure 1 is a fragmentary perspective view of my novel elevated vehicle supporting structure;

Fig. 2 is a view shown in cross section of the elevated structure and showing two electrically operated buses thereon;

Fig. 3 is a fragmentary view in elevation showing certain details of construction at one of the upright supports of the structure;

Fig. 4 is a top plan view of the structure shown in Fig. 3;

Fig. 5 is an enlarged top plan view of part of the structure shown in Fig. 3;

Fig. 6 is a view in elevation similar to Fig. 3 showing certain details of construction of the elevated structure between the upright supports thereof;

Fig. 7 is a detail view partly in section, taken along the line and in the direction of the arrows 7—7 of Fig. 6;

Fig. 8 is a detail view partly in section, taken along the line and in the direction of the arrows 8—8 of Fig. 6;

Fig. 9 is a sectional view taken along the line 9—9 of Fig. 6;

Fig. 10 is a detail view in section taken along the line 10—10 of Fig. 6;

Fig. 11 is a view partly in section and partly in elevation showing a trolley and manner of mounting the same on the elevated structure, and

Fig. 12 is a view partly in section taken along the line 12—12 of Fig. 11.

Referring to the drawings by characters of reference, the elevated structure includes a single row of spaced rigid upright supports 10, only one

of which is shown, the uprights 10 preferably being encased at their lower ends in concrete bases 11 sunken partially in the ground below the street or thoroughfare on which the elevated structure may be located. These upright supports 10 are rigidly constructed of a number of sheet metal parts or plate members including an upright rectangular shaped plate member 12 to the opposite sides of which vertically extending plate members 13 are secured to provide, a plurality, three in this instance, of spaced upstanding hollow posts or columns 14. The plate members 13, of which there are four forming each post have longitudinal outturned flanges 15, Fig. 5, which are welded together and at the plate member 12 having similar outturned flanges 16 which are welded together and to the plate to provide a rigid, sheet metal upright support. As will be seen more clearly in Fig. 5, the plate 12 is common to and intersects the hollow posts 14 longitudinally thereof.

Mounted on the upper end of each of the outer posts 14 is a cross member 17, these cross members being in end to end alignment and each comprising a pair of welded together channel members 18 extending laterally and outwardly from the uprights. Adjacent their inner ends, the channel members 18 are welded to opposite sides of the upright plate member 12 at the top thereof and terminate in relatively spaced relation, as shown in Fig. 3, to provide clearance for the center post 14 which projects therebetween terminating substantially flush with the upper surfaces of the upper sides of the channel members 18. The lower sides or flanges, as at 20, of the channel cross members 18 seat on the upper ends of the outer posts 14 to which they are welded. Within the channel members 18 corner braces 21 are provided which are welded thereto above the outer posts 14 and reinforce the channel members 18.

At the outer end of each pair of cross channel members 18, a pair of uprights, comprising welded together elongated angle members 23 are provided and are rigidly secured to respective channel members by L-shaped corner pieces 24 which are welded to the cross members and to the upright angle members, as indicated, Fig. 3. Disposed between the main or post supported cross members 17 is a plurality of spaced cross members 25, one of which is more clearly shown in Fig. 6. These cross members 25 each comprise a pair of channel-shaped members 26 having oppositely directed upper and lower flanges or sides 27 and 28 respectively. At opposite ends of each

pair of the cross channel members 26, a pair of upright angle members 29 are provided which are the same as the angle members 23 at the main cross members and are also secured to the channel members 26 by L-shaped corner pieces 30 welded to the angle members 29 and to the channel members 26.

The present elevated structure is constructed for two-way travel and is thus provided with two spaced pairs of spaced runways 31 for the rubber tired wheels 32 of buses 33 which may be of any suitable type, but which are preferably electrically operated buses for substantially noiseless operation. The runways 31 are mounted on the cross members 25 and on the main cross members 17, extending transversely thereto. These runways 31 are preferably constructed in sections of suitable length for convenient handling and each comprises spaced, sheet metal sides 34 flanged at the bottom and welded to a bottom sheet metal plate or panel 35 providing a trough which is filled preferably with concrete having a level upper traction surface for the wheels of buses. Preferably, the bottom 35 of the troughs is provided with a central, longitudinally extending upwardly directed bent portion or rib 35a to reinforce the runways. The outer sides 34 of the extreme outer runways about the flanges of the uprights 23 and 29 to which they are rigidly secured by welding and the parts 34 and 35 of all four troughs or runways are welded to the main cross members 17 and to the intermediate cross members 25 thus rigidly securing the parts together.

Each of the main upright supporting members 10 is provided with an upright extension 36 comprising a channel girder the flanges and web of which consist respectively of a pair of channel members 37 having their sides or flanges oppositely directed and the lower ends of these channel members 37 are rigidly secured to the plate 12 by connecting plates 38 which are welded to the plate 12 and to the channel members 37. The cross members 25 (Fig. 6) each support intermediate its ends an upright 40 comprising a pair of channel members 41 which seats on their lower ends on respective channel members 26 to which the upright channel members 41 are rigidly secured by L-shaped braces 42 welded thereto and to the cross members. These central, aligned uprights 36 and 40 provide a rigid frame for the extended panels 44 of the adjacent trough sides 34 of the two sets of runways. The panels 44 form a central, longitudinal dividing wall which separates the two sets of runways. The extended panels 44 extend upwardly, engaging opposite sides of the uprights 36 and 40 to which they may be welded. Enclosing the upper edges of the panels 44 is a channel shaped rail 45 (Figs. 1 and 2) which is welded to the panels 44 and to the uprights to provide a rigid structure. The side uprights 23 and 29 are rigidly secured together by L-shaped rails 45 welded thereto to provide a rigid structure and the rails 45 and the central channel rail 45, in addition to rigidly securing the main and intermediate cross members together, serve as guide rails for the buses. As shown, in Fig. 2, the buses 33 are provided with vertically pivoted rubber tired guide wheels 46a which project from opposite sides of the bus body for rolling engagement with the side surfaces of the rails 45, 46 to thus maintain the bus on the runways 31 and limit side sway.

The elevated structure is preferably provided with walks along the opposite sides thereof for

workmen, which walks are preferably formed of sheet metal. Welded to each of the side uprights 23, 29, adjacent the upper ends thereof is a pair of horizontal angle members 47 which are preferably braced to respective uprights 23, 29 by pairs of angularly disposed channel members 48 welded at their upper ends to the horizontal angle members 47 and welded at their lower ends to the uprights 23, 29. Supported on and welded to the horizontal angle members 47, sections of suitable length plate members or metallic sheets 50 provides a walk and the outer guide rails 46 overlap and are welded to the metallic sheets to reinforce the same, to give added strength to the cross members 29 and to give a finished appearance to the structure. The walks are preferably provided with hand or guard rails, and to this end (Fig. 1) a pair of upright, welded together channel members 52 is secured to the outer end of each pair of the walk supporting members 47 by pairs of angle brackets 53 which are welded to the horizontal members 47 and to the upright members 52. A channel shaped sheet metal hand rail 54 fits over the upper ends of the channel uprights 52 and is welded thereto to connect the uprights rigidly together.

Disposed between the spaced runways of each pair is a pair of trolley wires 55 for the electrically operated buses (Figs. 11 and 12). Extending centrally and longitudinally between each pair of runways, an electric insulating support 56 which may be of wood is provided to support the trolley wires 55. Mounted on the upper end of the support 56 and extending throughout the length of the elevated structure is a cover or shield 57 overlying and protecting the trolley wires from rain, snow, etc. This shield 57 is preferably angularly disposed having outwardly and downwardly extending portions 58 to shed snow and water. Secured to the angle top outwardly of the trolley wires 55 are wooden side strips 60 to shield the trolley wires. The shield 57 is supported at spaced intervals on the main cross members 17 and on the intermediate cross members 25 by upstanding rod-like stanchions or posts, each having a flange 62 providing seating surfaces for the underside of the wooden central support 56. The rod-like stanchions 61 have reduced upper end portions extending through apertures in the support 56 and in the top, the upper end of the stanchion being threaded to receive a nut 64 to tightly clamp the shields to the stanchion. Extending over the shield, at each stanchion, is a metallic reinforcing strip 64a apertured to receive respective stanchions and to provide a rigid bearing surface for washers 65 under the stanchion nuts 64. At their lower ends, the stanchion rods 61 are clamped and held tightly between a pair of brackets 66 which straddle respective cross members 17 and 25 and are rigidly secured thereto by bolts and nuts 67 and 68 respectively.

The trolley wires 55 are supported on rods 70 secured in and to the wooden support 56 in horizontal staggered spaced relation. For each of the supporting rods 70 the wooden support 56 is provided with a metallic insert or sleeve 71 to receive a reduced end portion 73 of the rod, the rod preferably being provided with spacer members 74 and washers 75. Mounted on and adjacent the outer end of each of the supporting rods 70, a pair of welded together plate members 76 are formed at their lower edges with complementary recesses providing a socket to receive and wherein the trolley wires 55 may be welded to the plates.

These plates 76 are clamped tightly between spacer members and washers by nuts 78 drawn down tightly on the outer reduced threaded ends of the rods.

5 From the foregoing description it will now be seen that I have provided a novel elevated structure for rapid transit bus systems. It will be appreciated that the present structure will be inexpensive both to manufacture and construct and yet will be strong and durable. Further, it will be seen that rubber tired buses may operate substantially noiselessly and that the construction of the elevated structure is such that bus operators will not have to steer such vehicles. In addition, 15 the present structure is substantially entirely open work so as to not blot out light and so that snow will not block the bus runways. Also, I have provided an elevated vehicle supporting structure so constructed that only a single row of upright or ground supports is required whereby the structure will only occupy a minimum of street space.

While I have shown and described a two-way rapid transit elevated structure for buses, it is to be understood that a one-way structure of similar construction may be had and that my invention should only be limited by the spirit and scope of the appended claims.

What I claim is:

1. An elevated supporting structure for vehicles comprising a plurality of uprights disposed substantially in a single path, a plurality of spaced main cross members mounted on said uprights, said main cross members extending outwardly on opposite sides of said uprights and overhanging therebeyond, two sets of spaced longitudinally extending load-carrying channel girders with the outer channel girders of each set mounted on and supported by the overhanging portions of said main cross members and with the inner channel girders mounted on the main cross members adjacent said uprights, the webs of said channel girders being disposed substantially horizontal and the flanges thereof substantially vertical, a plurality of secondary cross members secured to and supported by said channel girders between adjacent main cross members, and pavement strips for vehicle wheel tires mounted on and supported by said channel girder webs.

2. An elevated supporting structure for vehicles comprising a plurality of uprights disposed

substantially in a single path, a plurality of spaced main cross members mounted on said uprights, said main cross members extending outwardly on opposite sides of said uprights and overhanging therebeyond, two sets of spaced longitudinally extending load-carrying channel girders with the outer channel girders of each set mounted on and supported by the overhanging portions of said main cross members and with the inner channel girders mounted on the main cross members adjacent said uprights, the webs of said channel girders being disposed substantially horizontal and the flanges of said channel girders extending upwardly from the opposite edges of their webs to define troughs, a plurality of secondary cross members secured to and supported by said channel girders between adjacent main cross members and pavement strips for vehicle wheel tires mounted in the upwardly facing troughs lying between said webs and said upwardly extending flanges.

3. An elevated supporting structure for vehicles comprising a plurality of uprights disposed substantially in a single path, a plurality of spaced main cross members mounted on said uprights, said main cross members extending outwardly on opposite sides of said uprights and overhanging therebeyond, two sets of spaced longitudinally extending load-carrying channel girders with the outer channel girders of each set mounted on and supported by the overhanging portions of said main cross members and with the inner channel girders mounted on the main cross members adjacent said uprights, the webs of said channel girders being disposed substantially horizontal and the flanges thereof substantially vertical, a plurality of secondary cross members secured to and supported by said channel girders between adjacent main cross members, a guide rail structure disposed centrally above said uprights and secured to said main and secondary cross members to additionally interconnect them, laterally-bent longitudinally-extending sheet members connected to and extending between said guide rail structure and said inner channel girders, and pavement strips for vehicle wheel tires mounted on and supported by said channel girder webs.

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