

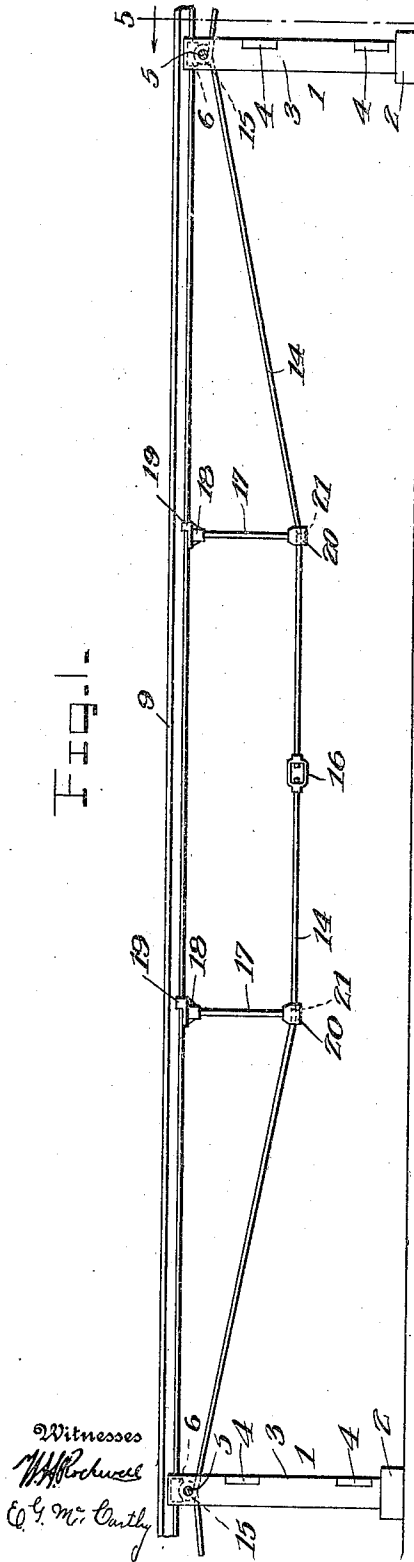
949,020.

W. C. LAWSON.
ELEVATED RAILWAY.
APPLICATION FILED MAY 14, 1909.

Patented Feb. 15, 1910.

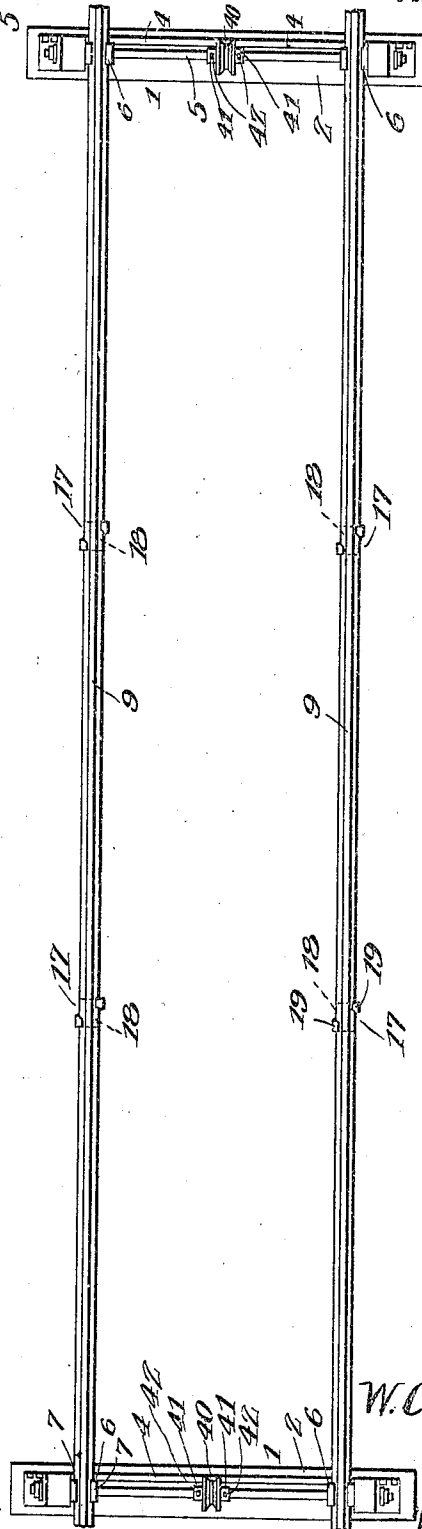
3 SHEETS—SHEET 1.

Fig. 1.



Witnesses
W. C. Lawson
Co. & Mr. Cantly

Fig. 2.



By

Inventor
W. C. Lawson

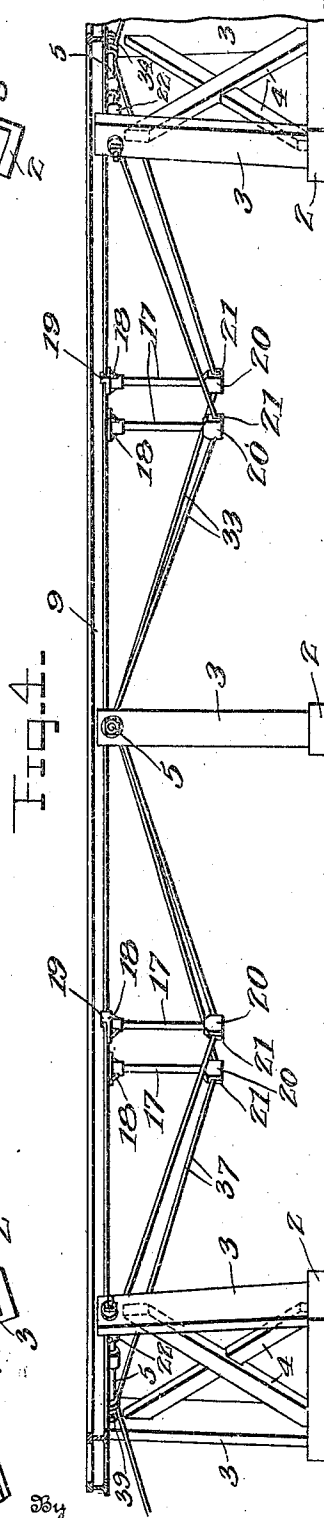
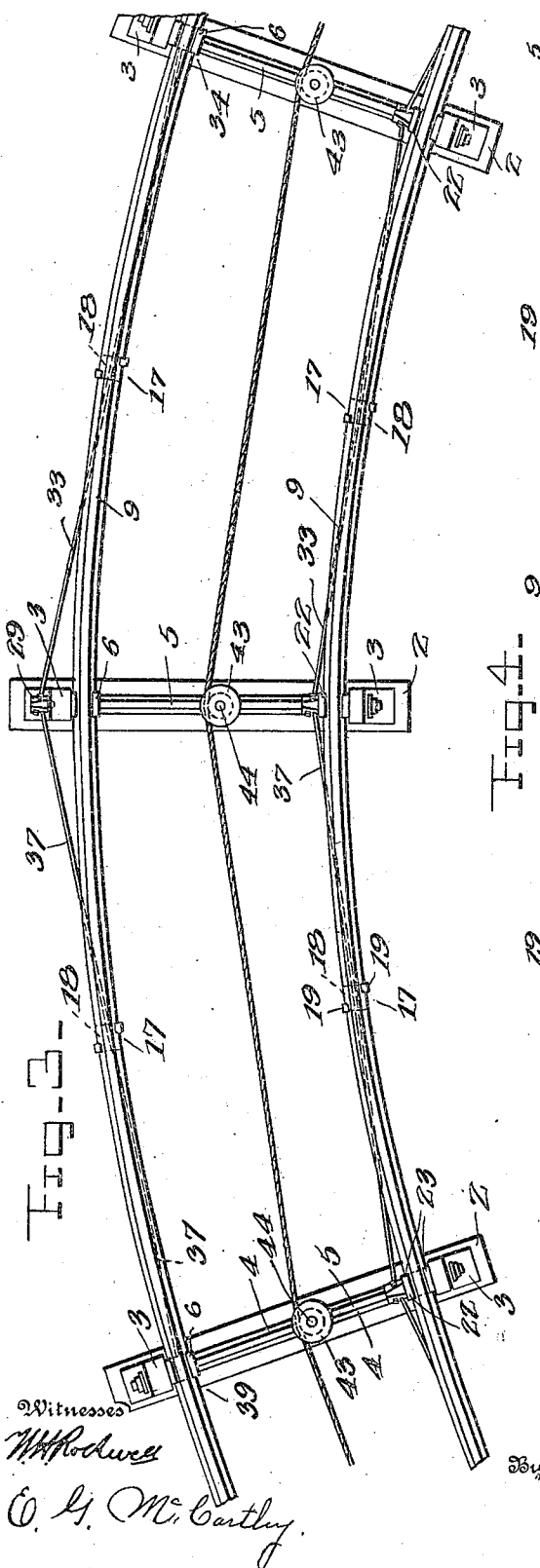
Attorney

949,020.

W. C. LAWSON.
ELEVATED RAILWAY.
APPLICATION FILED MAY 14, 1909.

Patented Feb. 15, 1910.

3 SHEETS—SHEET 2.



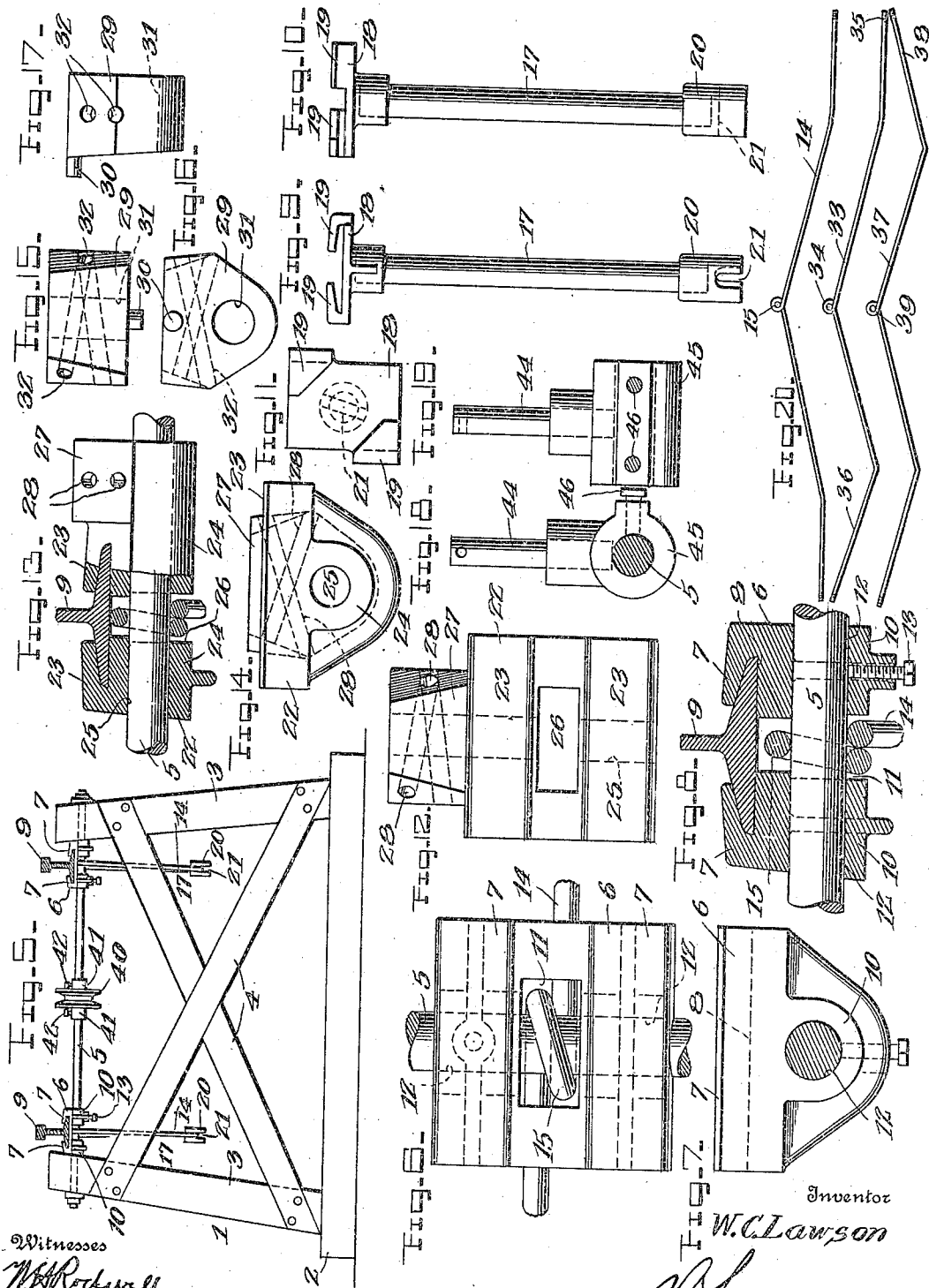
Inventor
W. C. Lawson
Attorney

949,020.

W. C. LAWSON.
ELEVATED RAILWAY.
APPLICATION FILED MAY 14, 1909.

Patented Feb. 15, 1910.

3 SHEETS—SHEET 3.



Witnesses
W. Rodwell
E. G. McCarthy.

Inventor
W. C. Lawson
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM C. LAWSON, OF ROANOKE, VIRGINIA.

ELEVATED RAILWAY.

949,020.

Specification of Letters Patent.

Patented Feb. 15, 1910.

Application filed May 14, 1909. Serial No. 496,064.

To all whom it may concern:

Be it known that I, WILLIAM C. LAWSON, citizen of the United States, residing at Roanoke, in the county of Roanoke and State of Virginia, have invented certain new and useful Improvements in Elevated Railways, of which the following is a specification.

This invention relates to railways for transportation purposes, and the primary object is to provide a novel structure of a very simple, but entirely practical character, which can be readily set up and taken down, and which when in assembled condition, is strong and rigid.

While the invention may be embodied in a variety of ways, the preferred form of construction is illustrated in the accompanying drawings, wherein:—

Figure 1 is a side elevation of a straight portion of the track. Fig. 2 is a top plan view of the same. Fig. 3 is a continuation of Fig. 2, but illustrating a curved portion of the track. Fig. 4 is a side elevation of a portion illustrated in Fig. 3. Fig. 5 is a cross sectional view substantially on the line 5—5 of Fig. 1. Fig. 6 is a plan view on an enlarged scale of the form of chair illustrated in Fig. 5. Fig. 7 is a side elevation of the same. Fig. 8 is a sectional view there-through longitudinally of the tie rod. Fig. 9 is a side elevation of one of the thrust rods of the truss braces. Fig. 10 is a similar view at right angles to Fig. 9. Fig. 11 is a top plan view of the same. Fig. 12 is a plan view of a form of rail chair used on a curve. Fig. 13 is a sectional view therethrough longitudinally of the tie rod, and showing said tie rod in place. Fig. 14 is an end elevation. Fig. 15 is a plan view of an anchor block for certain of the truss brace rods employed on a curved section of track. Fig. 16 is an end elevation thereof. Fig. 17 is a side view. Figs. 18 and 19 are elevations of one of the mountings for the idler sheaves, used on the curved section of track. Fig. 20 illustrates different forms of truss brace rods employed.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the embodiment disclosed, a plurality of spaced supporting members 1 are employed, each member preferably consisting of a suitable bed-piece or sleeper 2 having spaced convergently disposed standards 3 connected by crossed braces 4. The upper

ends of the standards are connected by horizontally disposed tie rods 5.

Considering first the straight portion of the track, illustrated in Figs. 1, 2 and 5—11 inclusive, it will be noted that rail chairs 6 are mounted on each tie rod 5. Referring more particularly to Figs. 6, 7 and 8, the rail chairs have upper rail-embracing jaws 7, forming a seat 8 that receives the ends of the rails 9 and maintains said rails in alignment. The chairs furthermore have depending ears 10 that are spaced apart and form between them a socket 11. The ears have alined openings 12, through which the tie rod 5 passes, and one of said ears preferably has a set screw 13 threaded thereinto, said set screw engaging the tie rod, and serving to hold the chair in the desired position. The rails 9 are preferably free in the rail chairs. In other words, no fasteners secure the ends of said rails to the chairs, and in order to effectively prevent displacement of the supporting members 1, truss braces connect the same. In the preferred form of construction, for the straight portions of the track, these truss braces comprise truss rods 14, which have their central portions coiled, as shown at 15 about the tie rods 5 in the sockets 11 of the rail chairs. The end portions of adjacent truss rods are connected by turnbuckles 16. Thrust rods 17, arranged between the supporting members 1, are interposed between the truss rods 14 and the rails 9. In the preferred form of construction, and as shown more specifically in Figs. 9, 10 and 11, these thrust rods 17 have cast or otherwise secured upon their upper ends, rail chairs 18 provided at their diagonally opposite corners with rail-embracing jaws 19. The lower ends of the thrust rods 17 are provided with heads 20 having open-sided sockets 21, and it will be observed, particularly by reference to Figs. 9 and 11 that the sockets are arranged diagonally to the longitudinal line of the rail chairs 18, and consequently to the longitudinal line of the rail. With this construction therefore, it will be observed that when the turnbuckles 16 are tightened, not only will the coils grip the tie rods 5 and thus constitute means for preventing the displacement of the rail chairs 6 longitudinally of said tie rods, but the thrust rods 17 will be carried upwardly against the rails 9. At the same time, the truss rods 14 engaging in the diagonally disposed sockets 21 when being drawn taut,

will cause the thrust rods 17 to turn slightly, thus causing the rail-embracing jaws 19 to grip the rails and maintain their position thereon. Said rails, however, are free to expand and contract under temperature variations.

For the curved portions of the track, rail chairs of the character disclosed in Figs. 12, 13 and 14 and anchor blocks, such as illustrated in Figs. 15-17 inclusive, are employed. Referring to Figs. 3 and 4, it will be observed that the rails 9 are bent to the desired curvature, the rails on the inner side being carried by rail chairs 22 that are mounted on the tie rods 5. As shown in Figs. 12, 13 and 14, these rail chairs have overhanging rail-embracing jaws 23 and depending ears 24 provided with openings 25 to receive the tie rods 5. The ears 24 are spaced apart to provide a socket 26, through which the tie rod passes. One of the ears furthermore has an extension, in the form of an enlargement 27 that is provided with crossed-sockets 28 arranged above the tie rod. The outer rails are carried by the rail chairs 6 already described. The tie rods 5 extend, however, beyond the outer standards 3, and mounted on their projecting ends, are anchor blocks 29 shown specifically in Figs. 15 and 16-17. These anchor blocks each have a tooth 30 that is embedded in the adjacent standard 3. They have lower openings 31, through which the tie rods 5 pass, and they furthermore are provided with upper crossed sockets 32. The truss brace rods for one section of the curved track, are designated 33, and correspond in shape, though the outer, of course, is longer than the inner. A detail of one of such rods is illustrated in Fig. 20. It will be observed that they are provided with intermediate coiled portions 34, and one terminal, as 35, of each is threaded to receive the turnbuckle that connects it with the adjacent truss rod. The other end portion, as shown at 36, is upturned, and the outer rod is engaged in one of the sockets 33 of the anchor block 29, while the corresponding portion of the inner truss rod is engaged in one of the sockets 28 of the extension of the inner rail chair 22. But one set of thrust rods 17 are employed. The adjacent section of track employs truss rods 37 that have their ends engaged and secured respectively in the sockets 32 and 28 of the anchor block 29 and rail chair 22. They thence pass beneath thrust rods 17 and have intermediate portions coiled, as illustrated at 39 about the tie rod 5 of the next support and their opposite ends can be secured to the turnbuckle or to other anchor blocks and rail chairs 22 according to the configuration of the track, as will be obvious.

To properly support the hauling cable 65 upon the straight sections of track, idler

sheaves 40 are journaled directly on the tie bolts 5 between the rail chairs, and are held against longitudinal displacement by collars 41 secured in place by any suitable means, as for instance, set screws 42 where the track is curved. The sheaves, as illustrated at 43 are horizontally arranged and are journaled on upright spindles 44. These spindles are carried by sleeves 45 (see Figs. 18 and 19) that are mounted on the tie rods 5, and are held in place by one or more set screws 46 that are threaded through the sleeves and engage the tie rods.

It will be obvious that this structure is one that can be readily set up and taken down as desired. When in assembled position, however, it is strong and durable, and the parts thereof are not liable to accidental displacement. It will be obvious that the rails are not bolted or otherwise positively secured to the rail chairs and they can consequently expand and contract. They do not act as thrust members of the structure. The truss rods, however, form a continuous and unbroken connection between the various supports, and these truss rods constitute holding means for preventing the displacement of the rail chairs longitudinally of the tie rods.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. In an elevated railway, the combination with spaced supporting members, of carriage supporting track rails extending from one member to the next, and truss braces for the rails engaged therewith between the members and connected to the supporting members, said rails and braces constituting the sole bracing and tie connection between the supporting members.

2. In an elevated railway, the combination with spaced supporting members, of rail chairs mounted thereon, rails engaged with the chairs, and truss braces engaged with the rails and connected to the supporting members independently of the chairs.

3. In an elevated railway, the combination with spaced supporting members, of rail chairs mounted thereon, rails engaged with the chairs, and truss braces engaged with the rails and also engaged with the supporting members.

4. In an elevated railway, the combination with spaced supports, of rails mounted there-

on, and braces connecting the supports and having a gripping clamp engagement with the rails between said supports.

5 5. In an elevated railway, the combination with spaced supports, of rail chairs mounted thereon, rails having their ends loosely engaged in the chairs, and truss-braces for the rails extending between the supports and having devices that grip the rails between
10 said supports.

6. In an elevated railway, the combination with spaced supporting members, each including a tie element, of rail chairs mounted on the tie elements, rails mounted on the
15 chairs, and truss braces connected to the rails between their ends and extending from one supporting member to the next, said braces being engaged with the rail chairs.

7. In an elevated railway, the combination with spaced supporting members, each including spaced standards and a tie rod connecting the standards, of rail chairs having
20 openings through which the rods pass, rails mounted on the chairs, said truss braces connected to the rails between their ends and extending from one supporting member to the next, said braces being engaged with the
25 rail chairs.

8. In an elevated railway, the combination with spaced supporting members, of rail-
30 holding devices mounted thereon, braces extending from one member to the next and engaging both the members and the rail-holding devices to hold the latter against displacement on the former, and rails extending
35 from one supporting member to the next and engaged with the devices.

9. In an elevated railway, the combination with spaced supporting members, each including spaced standards and a tie element
40 connecting the standards, of rail-holding devices mounted on the tie element, braces extending from one member to the next and engaging both the tie element and the rail-holding devices to hold the latter against
45 displacement on the former, and rails mounted on the devices.

10. In an elevated railway, the combination with spaced supporting members having tie
50 rods, of rail joint chairs having openings through which the tie rods pass, braces extending from one member to the next and engaging both the tie rods and the chairs, and rails mounted on said chairs.

11. In an elevated railway, the combination with spaced supporting members having tie
55 rods, of rail chairs having openings through which the tie rods pass, rails mounted on the chairs, and truss braces engaged with the tie rods and chairs and including thrust rods
60 arranged between the supporting members and engaged with the rails.

12. In an elevated railway, the combination with spaced supporting members, of rail
65 joint chairs mounted on the members and

having sockets, rails engaged with the chairs, and truss braces for the rails engaged with the supporting members and also engaged in the sockets of the chairs.

13. In an elevated railway, the combination with spaced supports, each comprising
70 standards and a tie rod connecting the standards, of rails mounted on the supports, and braces having portions wrapped about the tie rod.
75

14. In an elevated railway, the combination with spaced supports, each comprising standards and a tie rod connecting the standards, of rails mounted on the supports, brace
80 rods having intermediate portions wrapped about the tie rods, and turnbuckles connecting the ends of the brace rods.

15. In an elevated railway, the combination with spaced supports, each comprising standards and a tie rod connecting the stand-
85 ards, of rails mounted on the supports, truss braces extending from one support to the next and comprising rods having intermediate portions wrapped about the tie rods, turnbuckles connecting the ends of the brace
90 rods, and thrust rods interposed between the brace rods and rails.

16. In an elevated railway, the combination with supports having tie rods, of rail
95 chairs mounted on the tie rods and having sockets through which said tie rods pass, and braces between the supports having portions located in the sockets and coiled about the tie rods.

17. In an elevated railway, the combination with supports having tie rods, of rail
100 chairs mounted on the tie rods and having sockets through which said tie rods pass, braces extending between the supports and having portions located in the sockets and
105 coiled about the tie rods, and turnbuckles connecting the ends of adjacent braces.

18. In an elevated railway, the combination with supports, of rails mounted thereon, truss brace rods beneath the rails, and thrust
110 rods having rail chairs on their upper ends that receive the rails and having transverse open-sided sockets in their lower ends that receive the truss rods.

19. In an elevated railway, the combination with supports, of rails mounted thereon, truss brace rods beneath the rails, and thrust
115 rods having rail chairs on their upper ends that receive the rails, said rods having transverse sockets in their lower ends that are disposed diagonally to the longitudinal line of the rail, said sockets receiving the truss
120 rods.

20. In an elevated railway, the combination with supports, of rails mounted there-
125 on, truss brace rods beneath the rails, and thrust rods having rail chairs on their upper ends, said chairs having opposite rail-embracing jaws, said thrust rods having heads on their lower ends provided with transverse
130

sockets that receive the truss rods and are disposed diagonally to the longitudinal line of the rail.

21. In an elevated railway, a straight and
5 a curved portion, spaced supports for both
portions having tie rods, devices mounted on
the tie rods and having sockets, and truss
braces extending from one support to the
next and engaged in the sockets.
- 10 22. In an elevated railway, a straight and
a curved portion, spaced supports for the
portions having tie rods, devices mounted on
the tie rods and having sockets, truss rods
15 having portions coiled about certain of the
tie rods in the sockets, and turnbuckles connecting
the ends of adjacent rods, and other
truss rods having their ends engaged and
secured in the sockets of the devices.
- 20 23. In an elevated railway, a straight and
a curved portion, spaced supports for both
having tie rods, rail chairs mounted on the
tie rods and having sockets, truss brace rods
extending from one support to the next and
having portions coiled about certain of the
25 rods in the sockets of certain chairs, turn-
buckles connecting the ends of certain of the
adjacent rods, other truss rods having their
ends engaged and secured in certain sockets
of the chairs, and thrust rods interposed be-
30 tween the truss rods and the rails between
the supports.

24. In an elevated railway, the combina-
tion with spaced supports having tie rods,

of devices mounted thereon and having
sockets, rails extending from one support 35
to the next, truss rods having their ends
engaged in the sockets, and thrust rods in-
terposed between the truss rods and the rails.

25. In an elevated railway, the combina-
tion with spaced supports having tie rods, 40
of rail chairs having openings through
which the tie rods pass, and cable sheaves
mounted on the tie rods between the chairs.

26. In an elevated railway, the combina-
tion with spaced supports, of rail chairs 45
mounted thereon, truss braces connecting the
supports and having rail chairs located be-
tween the supports, and rails mounted on
said rail chairs and being free to expand
and contract in the rail chairs on the sup- 50
port, but being gripped by the rail chairs
located between the supports.

27. In an elevated railway, the combina-
tion with spaced supports, of rail chairs 55
mounted thereon, rails having their ends
engaged and free in the rail chairs, and truss
braces extending from one support to the
next, engaged with the rail chairs and hav-
ing portions engaged with and clamping
the rails between the supports. 60

In testimony whereof I affix my signature
in presence of two witnesses.

WILLIAM C. LAWSON.

Witnesses:

FRANK DONALDSON BROWN,
CHAS. W. BISHOP.