

INSTRUCTIONS

(a) If Convention application insert "Convention"

(a) CONVENTION

COMMONWEALTH OF AUSTRALIA

Patents Act

62 1202

APPLICATION FOR A PATENT

(b) Insert FULL name(s) of applicant(s)

~~I/We~~ (b) JERVIS B. WEBB INTERNATIONAL COMPANY,
a corporation organized under the laws of the
State of Michigan, United States of America

(c) Insert FULL address(es) of applicant(s)

of (c) Webb Drive, Farmington Hills, Michigan,
United States of America.

(d) Insert TITLE of invention

hereby apply for the grant of a Patent for an invention entitled
(d) TRACK CLAMP ASSEMBLY

(e) Insert "complete" OR "provisional"

which is described in the accompanying (e) complete specification.

(Note: The following paragraph applies only to Convention applications)

This application is a Convention application and is based on the basic application(s) for a patent or similar protection identified by number, country, and filing date as follows:

(f) Insert number, country and filing date for each basic application

(f) Serial No. 07/319,544, filed in the United States of America on March 6, 1989.

Address for Service:

PHILLIPS, ORMONDE AND FITZPATRICK
Patent and Trade Mark Attorneys
37-41 Queen Street,
Melbourne, Australia

(g) Insert DATE of signing

Dated (g) January 26, 1990

(h) Signature of applicant(s) (For body corporate see headnote*)

(h) JERVIS B. WEBB INTERNATIONAL COMPANY

(i) Corporate seal if any

By:

Stephen Kurtis
Stephen Kurtis

Title: Vice President & General Manager

Note: No legalization or other witness required

COMMONWEALTH OF AUSTRALIA

Patents Act

DECLARATION FOR A PATENT APPLICATION

INSTRUCTIONS

(a) Insert "Convention" if applicable
(b) Insert FULL name(s) of applicant(s)

(c) Insert "of addition" if applicable
(d) Insert TITLE of invention

(e) Insert FULL name(s) AND address(es) of declarant(s) (See headnote**)

(f) Insert FULL name(s) AND address(es) of actual inventor(s)

(g) Recite how applicant(s) derive(s) title from actual inventor(s) (See headnote**)

(h) Insert country, filing date, and basic applicant(s) for the/each basic application

(k) Insert PLACE of signing

(l) Insert DATE of signing

(m) Signature(s) of declarant(s)

Note: No legalization or other witness required

In support of the (a) Convention application made by
(b) JERVIS B. WEBB INTERNATIONAL COMPANY,
a corporation organized and existing under the laws
of the State of Michigan, United States of America,
(hereinafter called "applicant(s)") for a patent (c)
invention entitled (d) TRACK CLAMP ASSEMBLY for an

I/we (e) Stephen Kurtis, Vice President & General Manager,
of Jervis B. Webb International Company,
of Webb Drive, Farmington Hills, Michigan 48331-5624
United States of America

do solemnly and sincerely declare as follows:

~~XXXXXX~~ (or, in the case of an application by a body corporate)

1. I am/~~XXXX~~ authorized to make this declaration on behalf of the applicant(s).

~~XXXXXX~~ (or, where the applicant(s) is/are not the actual inventor(s))

2. (f) Edward M. Duczowski, Jr., of 56739 12 Mile Road,

South Lyon, Michigan 48178, United States of
America

Clayton C. McDonald, 1843 Hacker Road, Howell,
Michigan, 48843, United States of America

is/are the actual inventor(s) of the invention and the facts upon which the applicant(s)
is/~~are~~ entitled to make the application are as follows:

(g) Applicant is the assignee of the invention from the
actual inventors.

(Note: Paragraphs 3 and 4 apply only to Convention applications)

3. The basic application(s) for patent or similar protection on which the application is based
is/~~are~~ identified by country, filing date, and basic applicant(s) as follows:

(h) Filed in the United States of America on March 6, 1989
by Edward M. Duczowski, Jr. and Clayton C. McDonald
under Serial No. 07/319,544

4. The basic application(s) referred to in paragraph 3 hereof was/~~were~~ the first application(s)
made in a Convention country in respect of the invention the subject of the application.

Declared at (k) Farmington Hills, Michigan
U.S.A.

Dated (l) January 26, 1990

(m) JERVIS B. WEBB INTERNATIONAL COMPANY

By: Stephen Kurtis
Stephen Kurtis

To: The Commissioner of Patents

Title: Vice President & General Manager

PHILLIPS ORMONDE & FITZPATRICK

Patent and Trade Mark Attorneys

(12) PATENT ABRIDGMENT (11) Document No. AU-B-50692/90
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 621202

(54) Title
TRACK CLAMP ASSEMBLY

International Patent Classification(s)
(51)⁵ E01B 025/24 E01B 025/10

(21) Application No. : 50692/90

(22) Application Date : 05.03.90

(30) Priority Data

(31) Number	(32) Date	(33) Country
319544	06.03.89	US UNITED STATES OF AMERICA

(43) Publication Date : 06.09.90

(44) Publication Date of Accepted Application : 05.03.92

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(57) This invention relates to an improved track clamp assembly, engageable with a monorail track having an I-shaped cross-sectional configuration, for attaching the track to a supporting member, or for splicing two sections of the track together in end-to-end relation.

CLAIM

1. A track clamp assembly engageable with a track having an I-shaped cross-sectional configuration formed by a vertical web with parallel horizontal flanges extending perpendicular thereto at opposite ends thereof and having a pair of longitudinally extending oppositely facing grooves provided in the flanges on at least one side of the web adjacent to the junctions between the web and the flanges, wherein said track clamp assembly comprises an upper clamp member having an upper edge insertable in the upper groove of the pair of grooves on said one side of the vertical web of the track, a lower clamp member having a lower edge insertable in the lower groove of said pair of

grooves on said one side of the vertical web of the track, said upper and lower clamp members having opposed interengageable ramp surfaces disposed intermediate said upper and lower edges, and connecting means securing said upper and lower clamp members to each other with their said upper and lower edges respectively inserted in the upper and lower grooves of said pair of grooves, and with their said ramp surfaces in interengagement, said connecting means being operable to relatively move said clamp members together along said ramp surfaces, the width dimension of said track clamp assembly between said upper and lower edges being increasable in response to such relative movement and forcing said upper and lower edges into clamped engagement with the track within said pair of grooves.

AUSTRALIA

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COMPLETE SPECIFICATION
(ORIGINAL)

621202

Class

Int. Class

Application Number:
Lodged:

Complete Specification Lodged:
Accepted:
Published:

Priority

Related Art:

Applicant(s):

Jervis B. Webb International Company
Webb Drive, Farmington Hills, Michigan, UNITED STATES OF AMERICA

Address for Service is:

PHILLIPS ORMONDE & FITZPATRICK
Patent and Trade Mark Attorneys
367 Collins Street
Melbourne 3000 AUSTRALIA

Complete Specification for the invention entitled:

TRACK CLAMP ASSEMBLY

Our Ref : 165071
POF Code: 802/10023

The following statement is a full description of this invention, including the best method of performing it known to applicant(s):

This invention relates to an improved track clamp assembly, engageable with a monorail track having an I-shaped cross-sectional configuration, for attaching the track to a supporting member, or for splicing two sections of the track together in end-to-end relation.

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Such a monorail track is conventionally formed with a vertical web, with parallel horizontal flanges extending perpendicular to the vertical web at the opposite ends thereof, and with a pair of longitudinally extending oppositely facing grooves provided in the flanges on each side of web. When a track of this type is used, for example in an overhead monorail system, one pair of grooves is employed in attaching the track to suitable, longitudinally spaced track supporting members as shown by U.S. Patent No. 4,798,146; the other pair of grooves may be used in the mounting of conductor bars on the track for supplying electrification to self-propelled vehicles supported and guided thereby.

The present invention provides a track clamp assembly, useable for either supporting or splicing a track of the type described above, and which simplifies the configuration of the track supporting members, compensates for dimensional variations in the track resulting from manufacturing tolerances, facilitates the installation of the track, and engages the track with a controllable locking action.

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According to the present invention, there is provided a track clamp assembly engageable with a track having an I-shaped cross-sectional configuration formed by a vertical web with parallel horizontal flanges extending perpendicular thereto at opposite ends thereof and having a pair of longitudinally extending oppositely facing grooves provided in the flanges on at least one side of the web adjacent to the junctions between the web and the flanges, wherein said track clamp assembly comprises an upper clamp member having an upper edge insertable in the upper groove of the pair of grooves on said one side of the vertical web of the track, a lower clamp member having a lower edge insertable in the lower groove of said pair of grooves on said one side of the vertical web of the track, said upper and lower clamp members having opposed interengageable ramp surfaces disposed intermediate said upper and lower edges, and connecting means securing said upper and lower clamp members to each other with their said upper and lower edges respectively inserted in the upper and lower grooves of said pair of grooves, and with their said ramp surfaces in interengagement, said connecting means being operable to relatively move said clamp members together along said ramp surfaces, the width dimension of said track clamp assembly between said upper and lower edges being increasable in response to such relative movement and forcing said upper and lower edges into clamped engagement with the track within said pair of grooves.

Preferably the ramp surfaces extend longitudinally of the track and obliquely to the upper and lower edges of the clamp members, are formed as V-shaped guides, and are brought into engagement by relative longitudinal movement between the clamp members, such movement also being imparted by the connecting means consisting of a single bolt and nut connection extending through outwardly projecting tabs on the clamp members, so that the locking action depends upon the extent to which the bolt and nut connection is tightened. One of the projecting tabs, preferably the one



on the upper clamp member, also forms a bracket for attaching that clamp member to a track supporting member.

Other features and advantages of the invention will appear from the description to follow of the presently preferred embodiment shown in the accompanying drawings, wherein:

FIG. 1 is an end elevation showing a track clamp assembly of the invention in engagement with an I-section track and connected to a track supporting member; and,

FIG. 2 is a side elevation of the track clamp assembly, taken as indicated by the line 2-2 of FIG. 1 in order to eliminate the track supporting member from this view for the sake of clarity.

In FIGS. 1 and 2, a track clamp assembly 10 of the invention is shown in engagement with a track 12 having an I-shaped cross-sectional configuration formed by a vertical web 13 and upper and lower parallel horizontal flanges 14 and 15 at the opposite ends of the web 13. A pair of oppositely facing upper and lower grooves 16 and 17 extend longitudinally of the track 12 on each side of the web 13 at the junction between the web 13 and the flanges 14 and 15. As shown, the grooves 16 and 17 are defined by portions 18 which project from the flanges 14 and 15 in facing relation to each other and in parallel spaced relation with the web 13 on each side thereof. Tracks having a cross-sectional configuration of this general type are conventionally employed in monorail systems in which wheels of a self-propelled vehicle are

supported on the upper flange 14 and guided by the flange portions 18.

10 The track clamp assembly 10 is composed of an upper clamp member 20 and a lower clamp member 22 which are substantially configured correspondingly and oppositely to each other. The upper clamp member has a plate-like main portion or body 23 defined by an inner face 24 and an outer face 25; by parallel, longer and shorter ends 26 and 27 spaced apart a desired distance longitudinally of the track 12; by an upper edge 28 extending linearly between the upper extremities of the ends 26 and 27 perpendicular thereto; and by ramp surfaces 30 and 31 disposed between the lower extremities of the ends 26 and 27 and offset by a surface 32 which is parallel to the ends and which forms part of a tab or bracket 34 projecting from and normal to the outer face 25. Ramp surfaces 30 and 31 extend obliquely to the upper edge 28 and are formed as oppositely facing V-shaped guides (FIG. 1). The upper edge 28 is insertable in one of the upper grooves 16 of the track 12.

20 The corresponding, oppositely configured lower clamp member 22 has a plate-like body 36 with an inner face 37, an outer face 38, parallel shorter and longer ends 39 and 40, a lower edge 42 extending linearly between the lower extremities of the ends, and ramp surfaces 44 and 45 disposed between upper extremities of the ends 39 and 40 and offset by a surface 46 forming part of a tab 48 which projects from the outer face 38 and which is smaller than the bracket 34 of the upper clamp member 20. Ramp surfaces

44 and 45 extend obliquely to the lower edge 42, and are also formed as oppositely facing V-shaped guides, respectively complementary to the ramp surfaces 30 and 31 of the upper clamp member 20. The lower edge 42 is insertable in one of the lower grooves 17 of the track 12, which lower groove forms with one of the upper grooves 16 a pair of grooves on one side of the web 13 of the track.

As shown in FIG. 1, the lower edge 42 of the lower edge 42 of the lower clamp member 22 is a tapered surface inclined upwardly toward the outer face 38 of the member 22; likewise, the upper edge 28 of the upper clamp member 20 is oppositely tapered, being inclined downwardly toward the outer face 25 of the member 20. The edges 28 and 42 thus outwardly converge.

A connecting bolt 50 extends longitudinally or lengthwise of the clamp assembly 10 through holes in the tab 48 of the lower clamp member 22 and in the bracket 34 of the upper clamp member 20 for connecting the clamp members together in assembled relation engaging the track 12. This connection is made by first positioning the upper clamp member 20 with its inner face against one side of the vertical web 13 of the track 12 and with its upper edge 28 inserted in the upper groove 16 of the pair of grooves on that side of the vertical web 13. The lower clamp member 22 is positioned to the right of the upper clamp member (as shown in broken line in FIG. 2), is placed with its inner face 37 adjacent to the vertical web 13 of the track 12 and with its lower edge 42 inserted into the

lower groove 17 of the pair of grooves. Then, the clamp members 20 and 22 are relatively moved toward each other so that the end 39 and adjacent portion of the outer face 38 of the lower clamp member 22 pass inside of a notch 58 (FIG. 1) on the bracket 34 of the upper clamp member 20. Opposed ramp surfaces 30 and 31 on the upper clamp member 20 and 44 and 45 on the lower clamp member 22 are brought into interengagement, the connecting bolt 50 is installed, and a nut 52 is threaded onto the bolt 50. Tightening of the bolt and nut connection produces endwise closing relative movement between the clamp members 20 and 22 along their ramp surfaces 30, 31 and 44, 45. As shown in FIG. 2, these ramp surfaces are arranged so as not to unduely restrict such endwise relative movement. The ramp surface 44 on the lower clamp member has a length less than that of the upper ramp surface 30 which it engages, the ramp surface 44 terminating in a non-oblique surface extending to the offset surface 46. Likewise, the upper ramp surface 31 has a length less than its complementary lower ramp surface 45 and terminates in a non-oblique surface extending to the offset surface 32. Offset surfaces 32 and 46 are spaced endwise to provide a range of endwise movement between the clamp members.

The endwise closing relative movement of the clamp members 20 and 22 along their ramp surfaces 30, 31 and 44, 45 results in increasing the dimension between their upper and lower edges 28 and 42 and places these edges into firm locking engagement with the track to an extent controllable

by the degree to which the bolt and nut connection 50, 52 is tightened.

Forces on the track 12 resulting from this engagement are applied closely adjacent to the root or base of the web 13, rather than to the midpoint of the flanges 14 and 15, due to the outward convergence of the edges 28 and 42 of the clamp members. The engagement so obtained between the clamp assembly 10 and the track 12 is sufficiently positive as to enable the clamp assembly to be employed as a splice or connection between adjacent end-to-end sections of the track 12.

Pairs of holes 54 in the upper clamp member 20 and 55 in the lower clamp member 22 permit the optional bolting of the assembly 10 to the track 12 by drilling corresponding holes in the track web 13 after the assembly 10 has been installed as described above.

FIG. 1 illustrates in broken line a track supporting member 56 and means comprising a pair of bolts 58 for attaching the bracket 34 of the upper clamp member 20 of the clamp assembly 10 to the track supporting member. This attachment of the upper clamp member 20 to the track supporting member 56 can be made prior to the installation of the track 12. When a series of upper clamp members 20 have been so attached to a series of track supporting members, a section of the track 12 can be hung on the upper clamp members 20 and positioned thereby at proper elevation while a lower clamp member 22 is installed on each of the series of upper clamp members. The track supporting member

56 can be simply formed from plate stock and can be attached to either side of the upper clamp member bracket 34. The lower terminal end 60 of the supporting member 56 is provided with a recess 62 for clearance in the installation of the connecting bolt 50 and nut 52.

The clamp assembly 10 thus has the advantages of minimal assembly time; of providing an accurate support for the track 12 during the installation thereof; of providing a positive locking engagement with the track member that compensates for dimensional tolerances and that applies forces to the track member adjacent to its vertical web; and, of maintaining alignment between the upper and lower clamp members 20 and 22 both during and after their assembly by the interengagement of their opposing, V-shaped guides of the ramp surfaces 30, 31 and 44, 45.

The claims defining the invention are as follows:

1. A track clamp assembly engageable with a track having an I-shaped cross-sectional configuration formed by a vertical web with parallel horizontal flanges extending perpendicular thereto at opposite ends thereof and having a pair of longitudinally extending oppositely facing grooves provided in the flanges on at least one side of the web adjacent to the junctions between the web and the flanges, wherein said track clamp assembly comprises an upper clamp member having an upper edge insertable in the upper groove of the pair of grooves on said one side of the vertical web of the track, a lower clamp member having a lower edge insertable in the lower groove of said pair of grooves on said one side of the vertical web of the track, said upper and lower clamp members having opposed interengageable ramp surfaces disposed intermediate said upper and lower edges, and connecting means securing said upper and lower clamp members to each other with their said upper and lower edges respectively inserted in the upper and lower grooves of said pair of grooves, and with their said ramp surfaces in interengagement, said connecting means

being operable to relatively move said clamp members together along said ramp surfaces, the width dimension of said track clamp assembly between said upper and lower edges being increasable in response to such relative movement and
5 forcing said upper and lower edges into clamped engagement with the track within said pair of grooves.

2. A track clamp assembly according to claim 1 wherein said interengageable ramp surfaces comprise at least one downwardly facing surface on said upper clamp member and at
10 least one upwardly facing surface on said lower clamp member, said downwardly and upwardly facing surfaces extending longitudinally of the track and obliquely to said upper and lower edges.

3. A track clamp assembly according to claim 1 wherein said interengageable ramp surfaces comprise two sets of
15 downwardly facing and upwardly facing surfaces formed respectively on said upper and lower clamp members, said sets of surfaces extending longitudinally of the track and obliquely to said upper and lower edges, one of said sets of
20 surfaces being spaced longitudinally from the other of said sets of surfaces and being offset towards one of said upper and lower edges from the other of said sets of surfaces.

4. A track clamp assembly according to claim 3 wherein one surface of each of said sets of surfaces is longitudinally shorter than the other surface of that set.
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5. A track clamp assembly according to any one of claims 1 to 4 wherein said ramp surfaces are formed as interengageable V-shaped guides.

5 6. A track clamp assembly according to any one of claims 1 to 5 wherein said connecting means comprises a first tab portion formed with said upper clamp member, a second tab portion formed with said lower clamp member, said tab portions projecting perpendicularly from said upper and lower clamp members, and a threaded connector extending
10 longitudinally of the track through said tab portions.

7. A track clamp assembly according to claim 6 wherein said first tab portion includes a bracket adapted to be attached to a track supporting member.

15 8. A track clamp assembly according to any one of claims 1 to 7 wherein said upper and lower clamp members each have an inner face adapted to be positioned adjacent to the said vertical web of the track, an outer face, and said upper and lower edges of said clamp members converge toward the outer faces thereof.

20 9. A track clamp assembly substantially as herein described with reference to the accompanying drawings.

DATED: 6 December 1991

PHILLIPS ORMONDE & FITZPATRICK
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JERVIS B. WEBB INTERNATIONAL COMPANY

David B Fitzpatrick



