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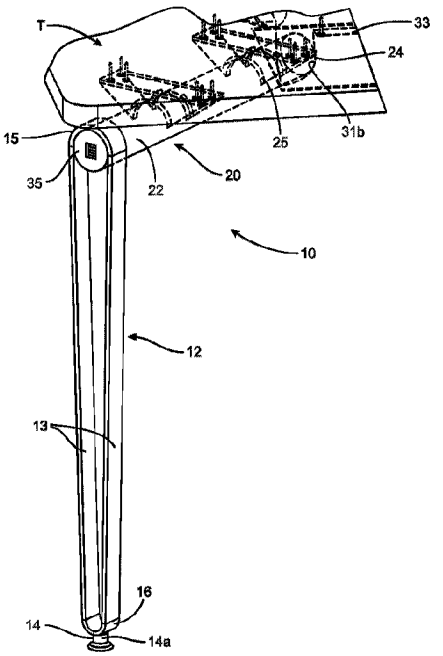
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(54) **Titre : ENSEMBLE DE SUPPORT DE TABLE COMPORTANT UNE INTERFACE ELECTRIQUE/DE DONNEES**
(54) **Title: TABLE SUPPORT ASSEMBLY WITH ELECTRICAL/DATA INTERFACE**



(57) **Abrégé/Abstract:**
A table includes a table top with at least three corners. A support assembly includes a plurality of hollow tubes configured to carry electrical/data wires and having end openings. Each tube is connected to the underside of the table top such one end of the tube is arranged at a corresponding corner of the table top so that an end opening is accessible at said corresponding comer. The support assembly further includes a plurality of leg assemblies, each leg assembly including a pair of leg members joined at a curved portion, the curved portion sized and configured a tube with the end opening accessible at the curved portion. An outlet plate is mounted to the leg assembly to cover the end opening and is provided with one or more electrical sockets and data ports connectable to electrical/data wires carried in the hollow tube.

ABSTRACT

A table includes a table top with at least three corners. A support assembly includes a plurality of hollow tubes configured to carry electrical/data wires and having end openings. Each tube is connected to the underside of the table top such one end of the tube is arranged at a corresponding corner of the table top so that an end opening is accessible at said corresponding corner. The support assembly further includes a plurality of leg assemblies, each leg assembly including a pair of leg members joined at a curved portion, the curved portion sized and configured a tube with the end opening accessible at the curved portion. An outlet plate is mounted to the leg assembly to cover the end opening and is provided with one or more electrical sockets and data ports connectable to electrical/data wires carried in the hollow tube.

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TABLE SUPPORT ASSEMBLY WITH ELECTRICAL/DATA INTERFACE

Background

The present disclosure relates to power and data features for furniture, such as conference tables and work stations. In particular, furniture with an electrical and/or data interface integrated into the support structure for the furniture

In this increasingly data-driven age people rely on their laptop, cell phone, and tablet at a conference or in their workplace. These electronic and computer devices require access to power and data lines. Whereas in the past a work surface was littered with power strips, electrical cords, and data cables, access modules have been provided that are mounted in the work surface so that these components can be hidden beneath the work surface, thereby ridding the work surface of a significant nuisance. A typical power/data access module includes a bezel that is mounted within a correspondingly shaped opening in the work surface or table top. The module provides access to a receptacle within and/or underneath the table top, with the receptacle carrying one or more electrical sockets and/or data ports

These types of access modules embedded within the table help retain the work surface when the modules are not in use. However, when it is desired to plug a cell phone into a data/power port the presence of the access module in the surface of the table top interrupts the work surface. There is a need for an electrical/data interface that allows users to access power and data sockets and ports without disrupting the work surface of the table top.

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Summary of the Disclosure

An article of furniture such as a table is provided with an integrated electrical/data interface that is readily accessible to persons working at the table. In one aspect, the article of furniture is a table with a table top having a working surface and an underside. The table top include at least three corners. The table includes a support assembly connected to the underside of the table top and supporting the table top above a ground surface. In one aspect, the support assembly includes a plurality of hollow tubes, each tube configured to carry electrical/data wires and having end openings at opposite ends thereof. Each tube is connected to the underside of the table top such that one of the opposite ends is arranged at a corresponding corner of the table top so that the end opening is accessible at the corresponding corner. The support assembly further includes a plurality of leg assemblies, each leg assembly including a pair of leg members joined at a curved portion that is sized and configured to receive one of the opposite ends of a tube with the end opening of the tube accessible at the curved portion. In a further feature, an outlet plate is removably mounted to either the leg assembly or the tube to cover the end openings. The outlet plate includes one or more electrical sockets and data ports connectable to electrical/data wires carried in the hollow tube.

Some embodiments disclosed herein relate to a support assembly for an article of furniture, the article of furniture having a working surface, the assembly comprising: a horizontal support assembly connected to and supporting said working surface above a ground surface, the horizontal support assembly including a number of hollow tubes configured to carry electrical/data wires and having end openings at opposite ends thereof; a plurality of leg assemblies, each leg assembly of the plurality of leg assemblies including a pair of leg members joined at a curved portion, the curved portion sized and configured to receive an end of one tube of the number of hollow tubes with one of the end openings of said one tube accessible at said curved portion; a collar fixed within said curved portion, and one of (a) a plurality of fasteners engaged between said collar and said end of said one tube, or (b) a sleeve configured for tight-fitting engagement with said end of said one tube to fasten said one tube to said leg assembly; and at least one outlet plate mounted to at least one of said leg assembly and said one tube to cover said one of the end openings and said collar, said outlet

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plate including one or more electrical sockets and data ports connectable to electrical/data wires carried in said one or more hollow tubes.

Some embodiments disclosed herein relate to a table, comprising: a table top having a working surface and an underside, the table top including at least three corners; a support assembly connected to the underside of said table top and supporting said table top above a ground surface, the support assembly including; a plurality of hollow tubes, each tube of said plurality of hollow tubes configured to carry electrical/data wires and having end openings at opposite ends thereof, each tube connected to the underside of said table top such that one of said opposite ends is arranged at a corresponding corner of said at least three corners so that said end opening at said one of said opposite ends is accessible at said corresponding corner; a plurality of leg assemblies, each leg assembly of the plurality of leg assemblies including a pair of leg members joined at a curved portion, the curved portion sized and configured to receive one of said opposite ends of a corresponding tube with said one of the end openings of the tube accessible at said curved portion; a collar fixed within said curved portion of each of said plurality of leg assemblies, and one of (a) a plurality of fasteners engaged between said collar and said one of aid opposite ends of each tube, or (b) a sleeve configured for tight-fitting engagement with said one of aid opposite ends of each tube to fasten each tube to a corresponding leg assembly; and at least one outlet plate mounted to at least one of said leg assembly and said tube to cover said one of the end openings and said collar, said outlet plate including one or more electrical sockets and data ports connectable to electrical/data wires carried in said one or more hollow tubes.

Some embodiments disclosed herein relate to a table comprising: a table top having a working surface and an underside, the table top including at least three corners; a support assembly connected to the underside of said table top and supporting said table top above a ground surface, the support assembly including; a plurality of hollow tubes, each tube of said plurality of hollow tubes configured to carry electrical/data wires and having end openings at opposite ends thereof, each tube connected to the underside of said table top such that one of said opposite ends is arranged at a corresponding corner of said at least three corners so that said end opening at said one of said opposite ends is accessible at said corresponding corner; a plurality of leg assemblies, each leg assembly of the plurality of leg assemblies including a

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pair of leg members joined at a curved portion, the curved portion sized and configured to receive one of said opposite ends of a corresponding tube with said one of the end openings of the tube accessible at said curved portion; and at least one outlet plate mounted to at least one of said leg assembly and said tube to cover said one of the end openings, said outlet plate including one or more electrical sockets and data ports connectable to electrical/data wires carried in said one or more hollow tubes, wherein said table top has a central portion at the middle of said table top inside said at least three corners; wherein said plurality of leg assemblies includes a leg assembly corresponding to each of said at least three corners of the table top; and wherein said plurality of hollow tubes includes a tube corresponding to each of said at least three corners of the table top and said tube is connected to the underside of said table top so that the other of said opposite ends is arranged at said central portion of said table top, the table further comprising a tray fastened to the underside of said table top at said central portion to cover said other of said opposite ends of each tube of said plurality of tubes.

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Description of the Figures

FIG. 1 is a side perspective view of a corner of a table incorporating the electrical/data interface of the present disclosure.

FIG. 2 is a further side perspective view of the corner of a table shown in **FIG. 1**.

FIG. 3 is a top perspective view of the corner of a table shown in **FIG. 1**.

FIG. 4 is a partial cut-away view of the corner of a table shown in **FIG. 1**.

FIG. 5 is a partial phantom side view of the corner of a table shown in **FIG. 1**.

FIG. 6 is a partial phantom side view the corner of a table shown in **FIG. 1**.

FIG. 7 is another partial phantom side view the corner of a table shown in **FIG. 1**.

FIG. 8 is a perspective view of a leg assembly of the table shown in **FIG. 1**.

FIG. 9 is a perspective view of a mounting hub for mounting a tube to a leg assembly.

FIG. 10 is a perspective view of an oval table top incorporating the electrical/data interface of the present disclosure.

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Detailed Description

For the purposes of promoting an understanding of the principles of the disclosure, reference will now be made to the embodiments illustrated in the drawings and described in the following written specification. It is understood that no limitation to the scope of the disclosure is thereby intended. It is further understood that the present disclosure includes any alterations and modifications to the illustrated embodiments and includes further applications of the principles disclosed herein as would normally occur to one skilled in the art to which this disclosure pertains.

An article of furniture, such as the table shown in **FIGS. 1-7**, includes a working surface in the form of a table top **T** that is supported by a support assembly **10** on a ground surface, such as a floor. The support assembly **10** includes three or more leg assemblies **12**, preferably corresponding to the number of corners of the table top. For instance, a typical work table is rectangular with four corners, so the support assembly for that table can have four leg assemblies **12**, one at each corner. Similarly, a triangular or pentagon-shaped table top will have 3 or 5 corners and thus 3 or 5 leg assemblies. A circular table top can include three or more leg assemblies as desired, with the leg assemblies positioned at the perimeter of the table top. The table top **T** is directly mounted to a horizontal support assembly **20** to span the horizontal dimensions of the table top and provide adequate vertical support for the table top. The leg assemblies **12** are connected to the horizontal support assembly **20** to complete the support assembly **10**.

Each leg assembly **12** includes two vertical leg members **13** that define a curved portion **15** at an upper end of the leg assembly. In one embodiment, the leg members and curved portion are formed from a common bar that forms the opposite vertical leg members and the curved

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portion. The common bar can be extruded in this configuration or can be formed from a flat bar that is bent around a mandrel to form the curved portion **15**. In another embodiment, the leg assemblies **12** can be formed by two leg sections attached, such as by welding, to form the opposite vertical leg members **13** and curved portion **15**. The leg assemblies **12** can be formed by other means to create the configuration shown in **FIG.4**. In one embodiment the curved portion **15** is generally circular with the vertical leg members **13** extending tangentially from the circular form at approximately diametrically opposite points, as best seen in **FIG. 1**.

Each leg assembly further includes a foot member **14** disposed at the opposite end of the leg members from the curved portion **15**. The foot member **14** can be attached to the bottom of the vertical leg members **13** and can include a height adjustable foot pad **14a** as is known in the art. The foot member **14** can be affixed to a lower curved portion **16** of the leg assembly, as shown in **FIG. 4**. The lower curved portion **16** can be integral with the leg members **13** so that the two leg members **13** and the two curved portions **15, 16** form a closed semi-oval shape. In the illustrated embodiment, the upper curved portion **15** is curved at a larger circular diameter than the lower curved portion **16**, so that the leg assembly **12** gives the appearance of a tapered leg. Of course, other leg configurations are contemplated for other aesthetic appearances.

The electrical/data interface feature of the present disclosure is provided by the horizontal support assembly **20**. In particular, the assembly **20** includes a horizontally disposed tube **22** that is seated within the upper curved portion **15** of each leg assembly. Each tube **22** defines a hollow channel **23** (**FIG. 7**) along its length, with the end of the channel forming an opening **31** at the end of the tube **22** disposed within the curved portion of the leg assembly **12**. The table top **T** is mounted to the tubes **22** by mounting brackets **24** that are affixed to the underside of the table top. The mounting brackets can define a curved seat **25** to receive the tube, with both

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features being generally circular. The mounting brackets **24** can be configured to clamp the tubes **22** of the support assembly or can be affixed to the tubes in a conventional manner, such as by screws or similar fasteners. The tubes **22** in the horizontal support assembly **20** are arranged so that the end opening **31a** of each tube is disposed within a leg assembly **12**, which, as described above, is situated at the corners of the table top **T**. For the rectangular table top **T** of the illustrated embodiment, four tubes **22** are provided corresponding to the four leg assemblies **12** and the four corners of the table top.

According to the present disclosure, the support assembly **10** is configured so that the tube openings **31a** are situated at perimeter of the working surface, such as the table top **T**. In one specific embodiment, the openings **31a** are aligned with the corners of the rectangular table top so that the openings are accessible at a location of the table that does not interfere with a person sitting at the table. For table tops having non-rectangular shapes, such as the oval table shown in **FIG. 10**, the leg assemblies **12** can be distributed along the perimeter of the table top **T'**, so that the leg assemblies do not interfere with persons sitting at the table, and so that the openings **31a** are readily accessible to those persons. Moreover, according to one aspect of the present disclosure, the openings **31a** provide an ideal location for accessing electrical power and data. An outlet plate **35** is affixed at the end of the tube **22**, with the outlet plate **35** including one or more ports, such as ports **35**. The ports can be conventional data ports or can include a conventional electrical socket. The outlet plate **35** can provide an array of ports within the circular diameter of the plate. The plate **35** can include fitting or hub **32** (**FIG. 6**) that can be configured to be removably engaged within the opening **31** of the tube, such as by a threaded or press-fit engagement.

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As shown in **FIG. 3**, the outlet plate **35** in the horizontal support assembly **20** provides easy access for receiving a data cable **C** of a device **D**, such as a smart phone. The cable **C** can be kept clear of the center of table top **T** and the user's device **D** can be placed near the corner of table top so that it, too, is clear of the work space.

In the illustrated embodiment, the horizontal support assembly **20** is configured so that the tubes **22** converge to the center of the table. The interior openings **31b** of the tubes are disposed within a central tray **33** (**FIGS. 4, 7**) that is affixed to the underside of the table top **T**. The tray may contain a wireless communications component, a wiring/data hub, a power supply or a similar electrical/data component, to which wires **W** passing through each of the tubes **22** is connected (**FIGS. 5-6**). It is also contemplated that the electrical/data component can be mounted directly to the underside of the table top without the tray, preferably centrally but optionally at other locations on the table top. The tray may also serve as a branch point for electrical/data connection to an external source, such as an electrical socket or data port. Alternatively, the exterior opening **31a** of one of the tubes **22** can provide an egress point for wiring associated with the other tubes of the support assembly, serving as the branch point for connection to the external source. It can be appreciated that all of the electrical/data wiring associated with all of the outlet plates **35** of the support assembly **10** is contained within the tubes **22** and the central tray **33**, so that none of the electrical/data interface components of the table or furniture item are exposed or susceptible to becoming entangled with a person sitting at the table. It can also be appreciated that the removable outlet plates **35** allow the electrical/data interface for the table to be tailored to a wide range of needs.

The leg assembly **12** can be configured as shown in **FIGS. 8-9** for engagement to the end of the tubes **22**. In this embodiment, the leg assembly includes a collar **40** engaged inside the

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curved portion **15**, such as by welding or other means of fastening. The collar **40** includes a bolt circle **41** with threaded fasteners extending from the collar. The bolt circle coincides with a circle of threaded openings in the end of the tube **22** at the opening **31a**. The threaded fasteners of the bolt circle **41** are thus used to engage the end of the tube **22** to the collar **40**, which in turn connects the leg assembly **12** to the horizontal support assembly **20**. Alternatively, the end of the tube **22** can include fasteners, such as bolts, projecting from the end, and the bolt circle **41** of the collar **40** includes openings to receive the bolts. A nut can be threaded onto each bolt to fix the tube **22** to the collar **40**. The collar **40** defines a central opening **42** through which wiring from the outlet plate **35** extends to enter the tube **22**. The central opening **42** can also be configured for removable engagement of the outlet plate **35**, and particularly for removable engagement of the hub **32** projecting from the plate. As mentioned above, the hub **32** can be configured for a threaded or press-fit engagement within the central opening **42**. It can be appreciated that the outlet plate **35** will cover the bolt circle **41** when it is engaged to the support assembly. Alternatively, the collar **40** can include a sleeve **43** that can be configured for a tight-fitting or other suitable engagement with the end of a tube **22**, to hold the tube in position in conjunction with the mounting brackets **24**. Other means for engaging the tubes to corresponding leg assemblies are contemplated provided that the end openings **31a** of the tubes are accessible to an outlet plate **35**.

It is contemplated that for any given article of furniture, such as a table, the end openings of the support assembly tubes can be covered with an outlet plate **35** or a dummy plate that does not include any electric/data ports **41**. Alternatively, the outlet plates at each corner can be configured with different types of electric/data ports. The removable outlet plates **35** allow the electric/data access to be tailored for the article of furniture.

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The components of the support assembly can be formed from materials commonly used for articles of furniture, such as office and conference tables. For instance, the leg assembly can be formed of anodized steel, while the horizontal support assembly can be formed of stainless steel, aluminum or a rigid plastic material.

The present disclosure should be considered as illustrative and not restrictive in character. It is understood that only certain embodiments have been presented and that all changes, modifications and further applications that come within the spirit of the disclosure are desired to be protected. For instance, it should be appreciated that the support assembly **10** can be used to support the seat and back of a chair so that the chair can be provided with electrical/data accessibility. In that instance, the working surface is not the table top **T** but instead the seat of the chair. It can also be appreciated that the support assembly **20** in the illustrated embodiment is configured to support a generally horizontally disposed surface, such as a table top or seat. However, the entire support assembly can be configured to support the working surface of the article of furniture at non-horizontal orientations, as desired for the particular article of furniture.

It is also contemplated that the leg assembly can be a T-configured assembly in which the foot member extends horizontally or perpendicular to the end of the leg members **13**, or in which the foot member is a cross-configuration. In this instance, the article of furniture may only require two leg assemblies since the foot member is configured to stabilize the support assembly in a known manner. In this instance, the support assembly **10** is configured so that the outlet plates **35** can be adjacent the perimeter of the working surface or table top, rather than at a corner of the working surface.

In certain configurations, a single tube **22** can be provided that extends from one side or end of the working surface or table top, to the opposite side or end. The leg assemblies engaged

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at the opposite ends of the single tube can be configured as described above – i.e., having a T-configuration or across-configuration that is capable of supporting the working surface with only two vertical leg assemblies.

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CLAIMS:

1. A support assembly for an article of furniture, the article of furniture having a working surface, the assembly comprising:

a horizontal support assembly connected to and supporting said working surface above a ground surface, the horizontal support assembly including a number of hollow tubes configured to carry electrical/data wires and having end openings at opposite ends thereof;

a plurality of leg assemblies, each leg assembly of the plurality of leg assemblies including a pair of leg members joined at a curved portion, the curved portion sized and configured to receive an end of one tube of the number of hollow tubes with one of the end openings of said one tube accessible at said curved portion;

a collar fixed within said curved portion, and one of (a) a plurality of fasteners engaged between said collar and said end of said one tube, or (b) a sleeve configured for tight-fitting engagement with said end of said one tube to fasten said one tube to said leg assembly; and

at least one outlet plate mounted to at least one of said leg assembly and said one tube to cover said one of the end openings and said collar, said outlet plate including one or more electrical sockets and data ports connectable to electrical/data wires carried in said one or more hollow tubes.

2. The support assembly of claim 1, wherein said outlet plate is removably mounted to at least one of said leg assembly and said one tube.

3. The support assembly of claim 2, wherein said outlet plate is removably mounted by a threaded or a press-fit interface with at least one of said leg assembly and said one tube.

4. The support assembly of claim 1, wherein each leg assembly of the plurality of leg assemblies includes a foot member connected to said pair of leg members.

5. A table, comprising:

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a table top having a working surface and an underside, the table top including at least three corners;

a support assembly connected to the underside of said table top and supporting said table top above a ground surface, the support assembly including;

a plurality of hollow tubes, each tube of said plurality of hollow tubes configured to carry electrical/data wires and having end openings at opposite ends thereof, each tube connected to the underside of said table top such that one of said opposite ends is arranged at a corresponding corner of said at least three corners so that said end opening at said one of said opposite ends is accessible at said corresponding corner;

a plurality of leg assemblies, each leg assembly of the plurality of leg assemblies including a pair of leg members joined at a curved portion, the curved portion sized and configured to receive one of said opposite ends of a corresponding tube with said one of the end openings of the tube accessible at said curved portion;

a collar fixed within said curved portion of each of said plurality of leg assemblies, and one of (a) a plurality of fasteners engaged between said collar and said one of aid opposite ends of each tube, or (b) a sleeve configured for tight-fitting engagement with said one of aid opposite ends of each tube to fasten each tube to a corresponding leg assembly; and

at least one outlet plate mounted to at least one of said leg assembly and said tube to cover said one of the end openings and said collar, said outlet plate including one or more electrical sockets and data ports connectable to electrical/data wires carried in said one or more hollow tubes.

6. The table of claim 5, wherein said outlet plate is removably mounted to at least one of said leg assembly and said one tube.

7. The table of claim 6, wherein said outlet plate is removably mounted by a threaded or a press-fit interface with at least one of said leg assembly and said one tube.

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8. The table of claim 5, wherein each leg assembly of the plurality of leg assemblies includes a foot member connected to said pair of leg members.

9. A table comprising:

a table top having a working surface and an underside, the table top including at least three corners;

a support assembly connected to the underside of said table top and supporting said table top above a ground surface, the support assembly including;

a plurality of hollow tubes, each tube of said plurality of hollow tubes configured to carry electrical/data wires and having end openings at opposite ends thereof, each tube connected to the underside of said table top such that one of said opposite ends is arranged at a corresponding corner of said at least three corners so that said end opening at said one of said opposite ends is accessible at said corresponding corner;

a plurality of leg assemblies, each leg assembly of the plurality of leg assemblies including a pair of leg members joined at a curved portion, the curved portion sized and configured to receive one of said opposite ends of a corresponding tube with said one of the end openings of the tube accessible at said curved portion; and

at least one outlet plate mounted to at least one of said leg assembly and said tube to cover said one of the end openings, said outlet plate including one or more electrical sockets and data ports connectable to electrical/data wires carried in said one or more hollow tubes,

wherein said table top has a central portion at the middle of said table top inside said at least three corners;

wherein said plurality of leg assemblies includes a leg assembly corresponding to each of said at least three corners of the table top; and

wherein said plurality of hollow tubes includes a tube corresponding to each of said at least three corners of the table top and said tube is connected to the underside of said table top so that the other of said opposite ends is arranged at said central portion of said table top,

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the table further comprising a tray fastened to the underside of said table top at said central portion to cover said other of said opposite ends of each tube of said plurality of tubes.

10. The table of claim 5, further comprising:

at least one mounting bracket corresponding to each of said plurality of hollow tubes and configured to fasten each tube to the underside of said table top.

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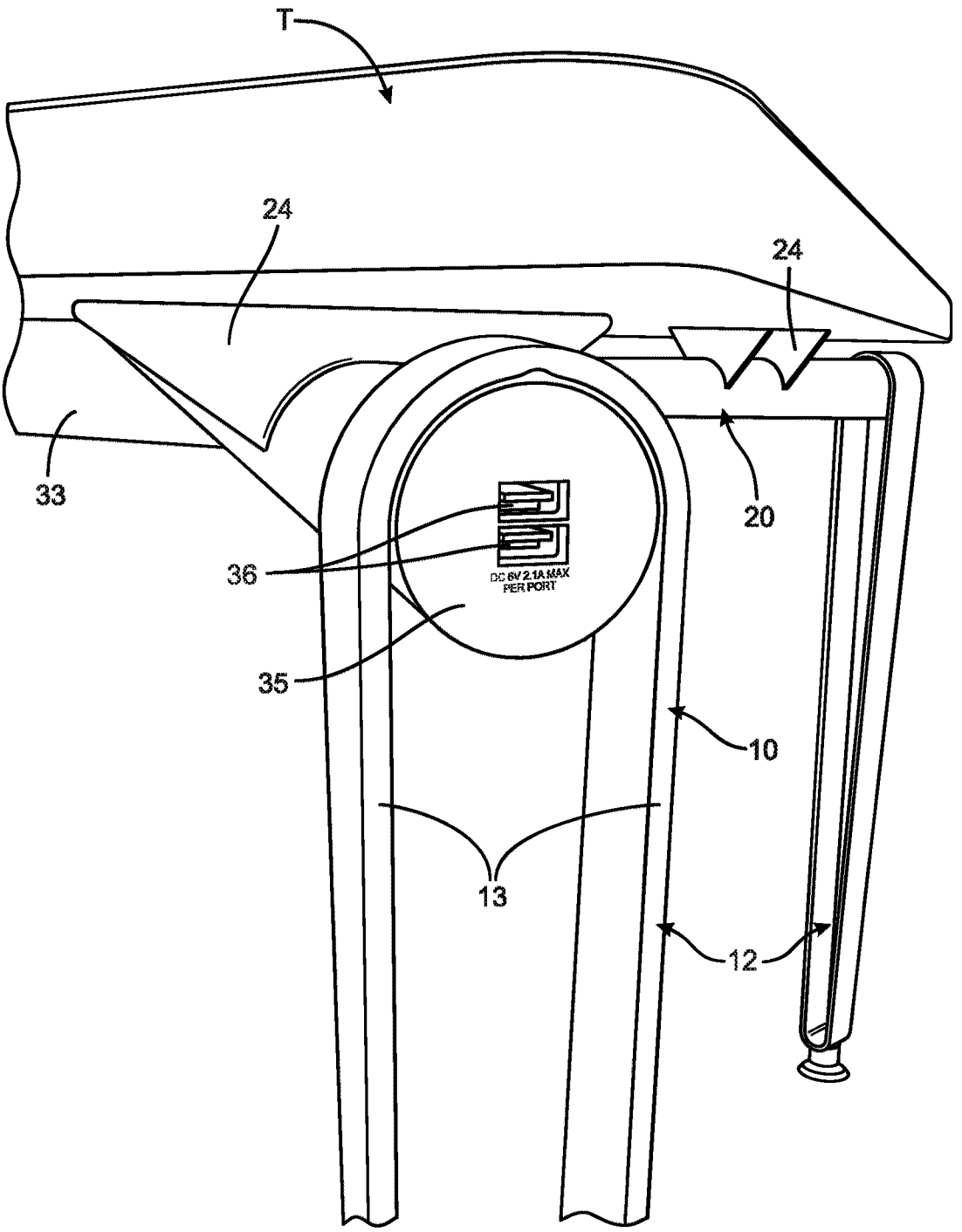
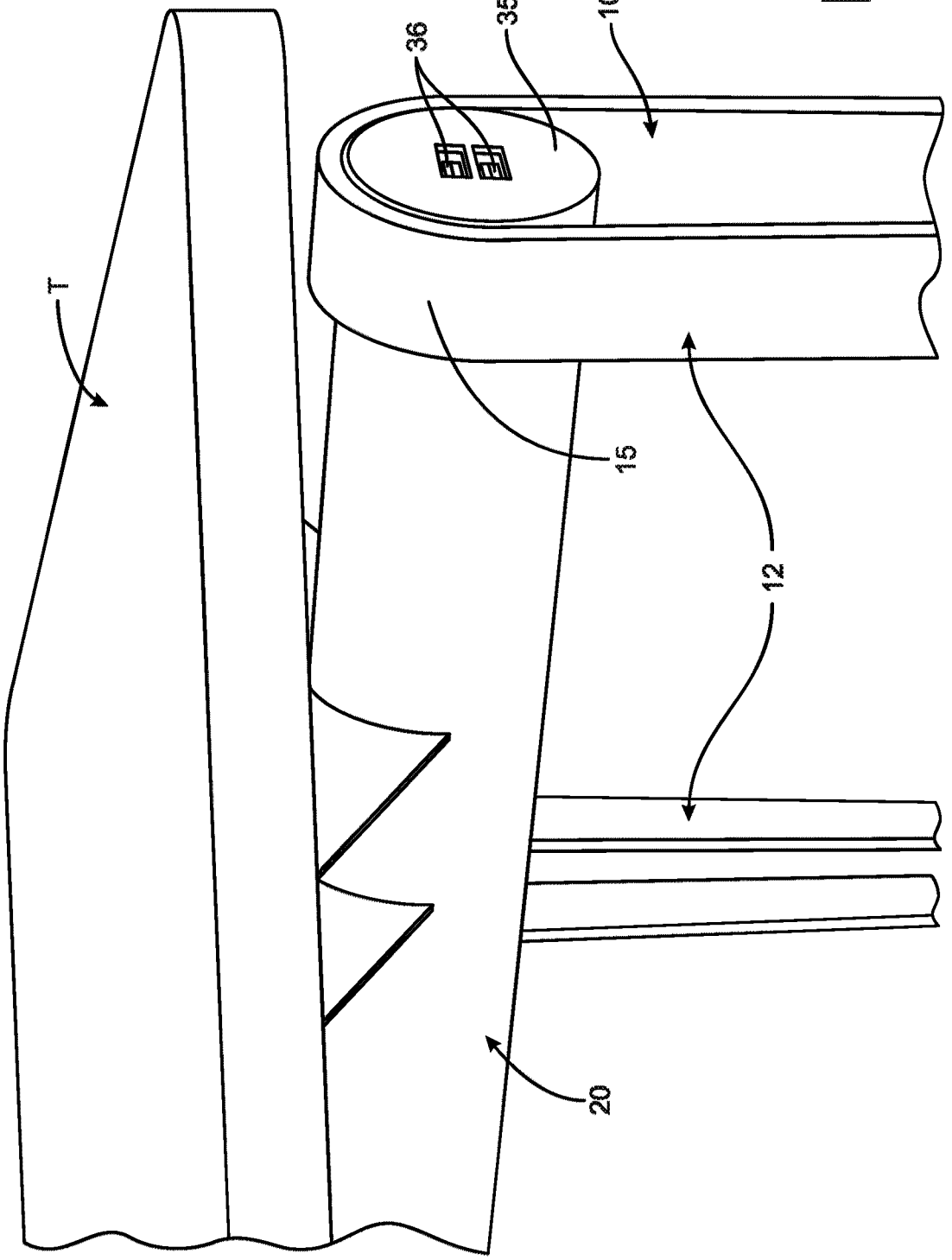


FIG. 1

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FIG. 2



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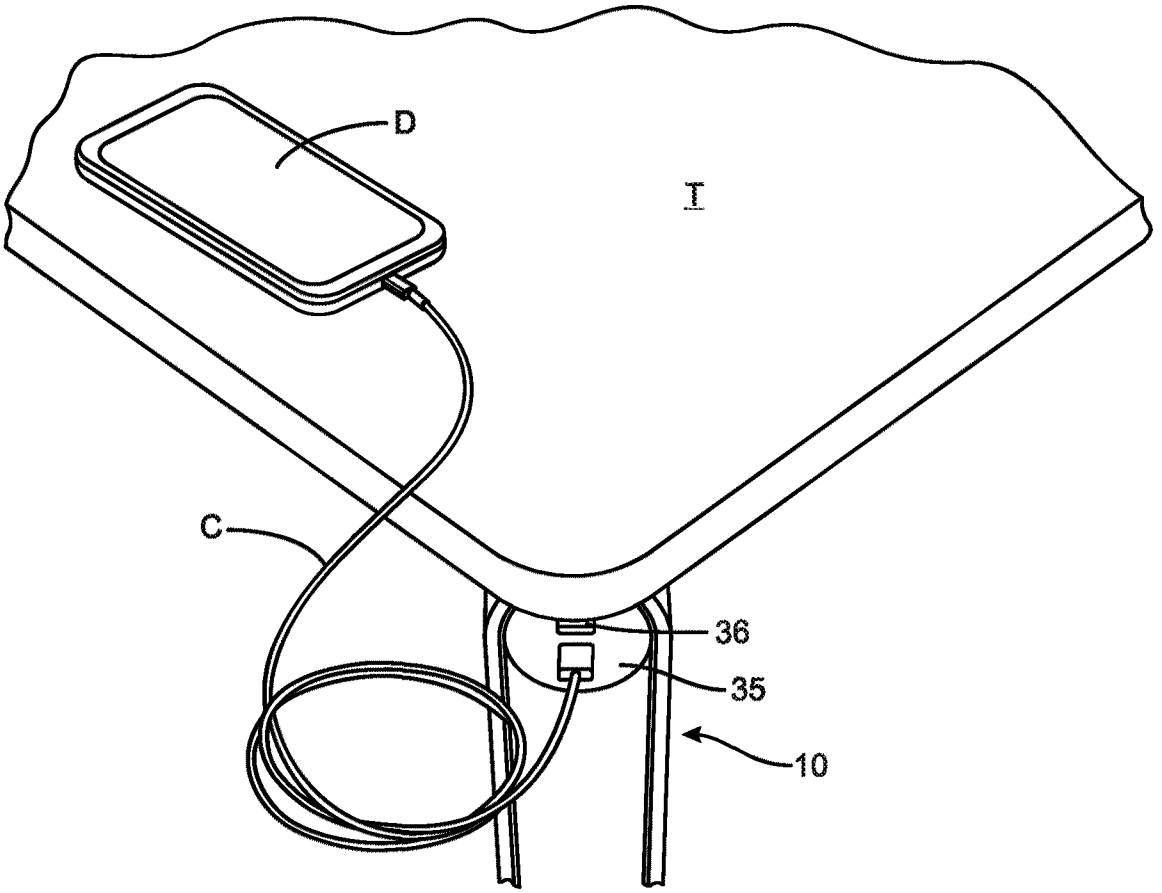


FIG. 3

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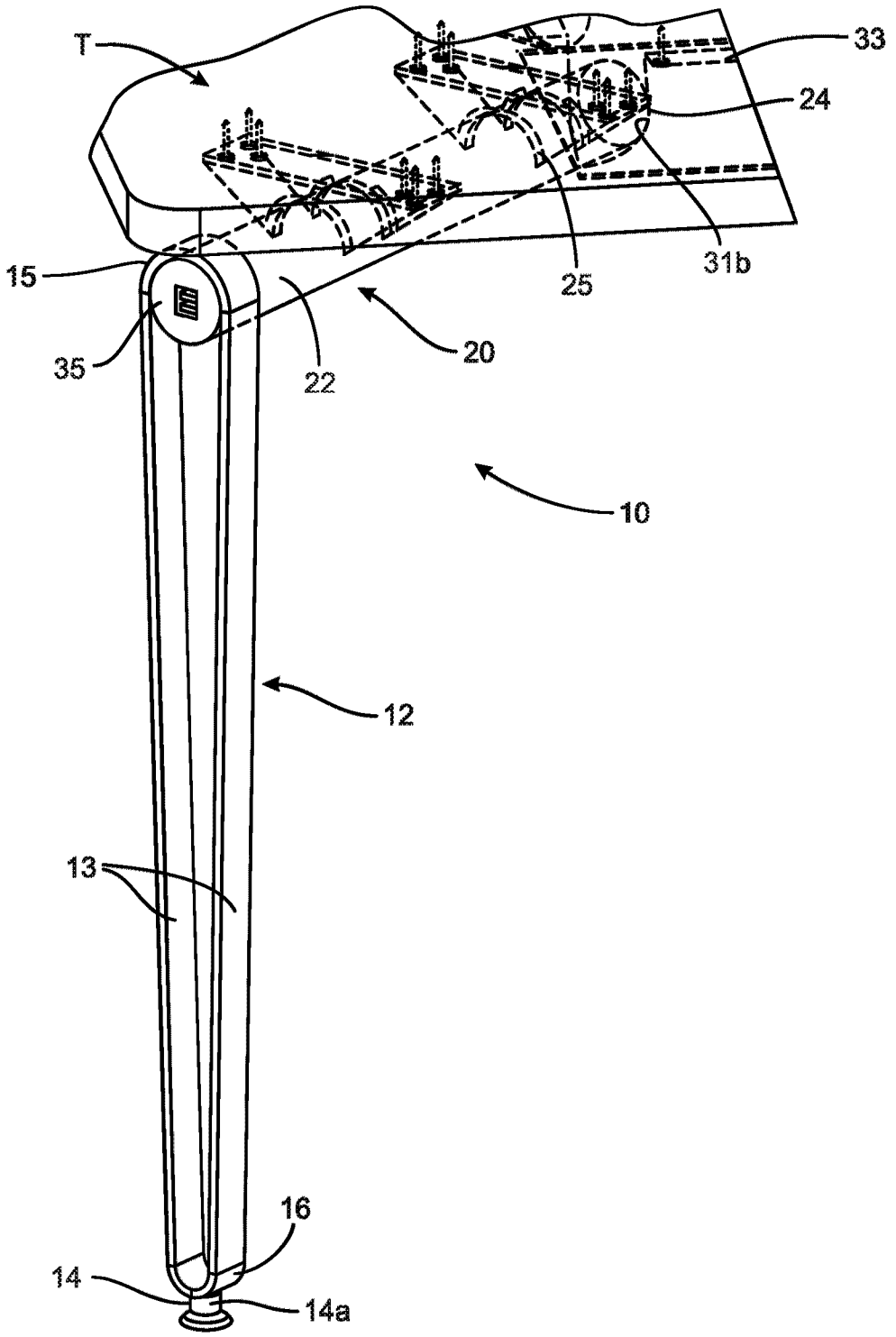


FIG. 4

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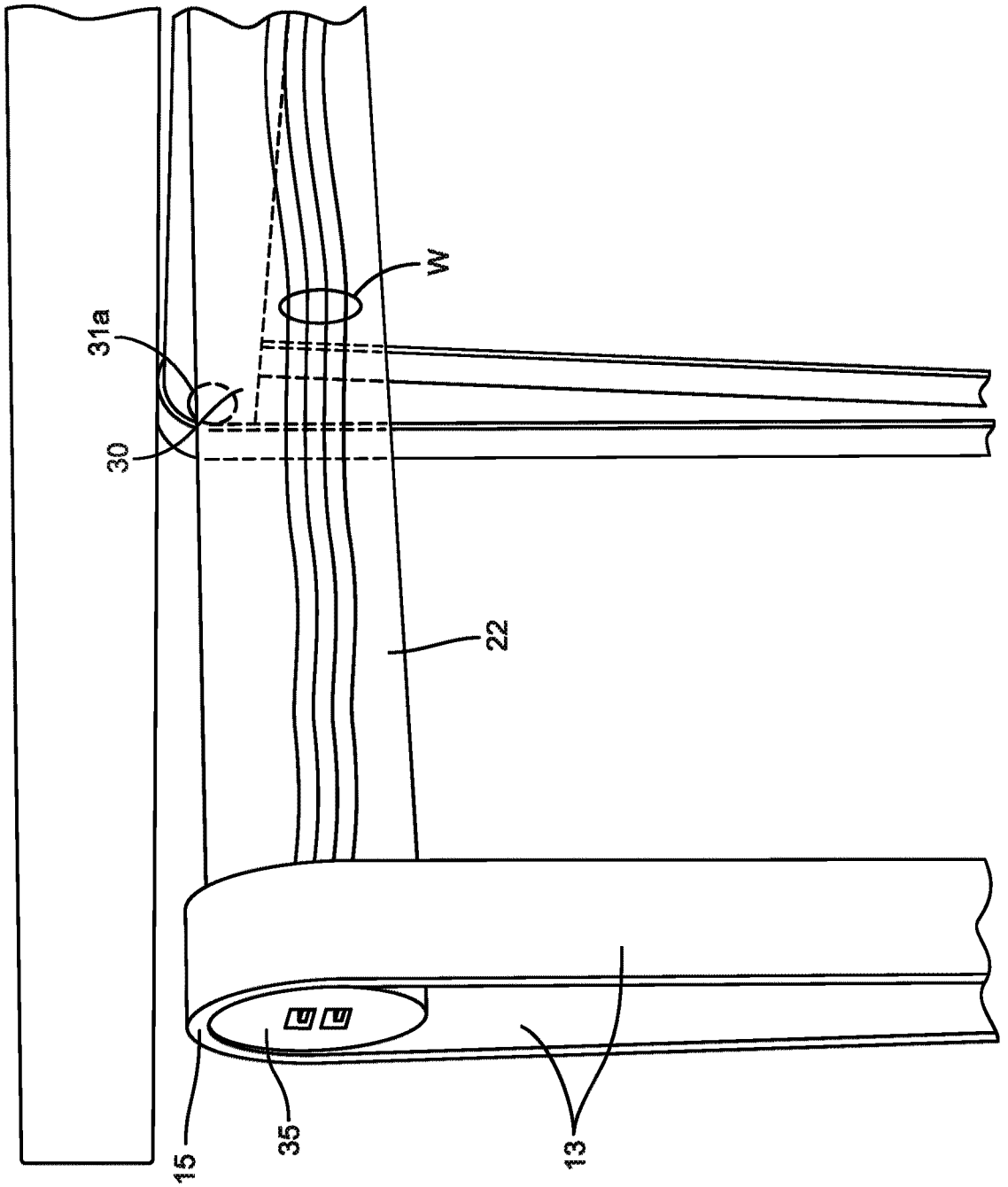


FIG. 5

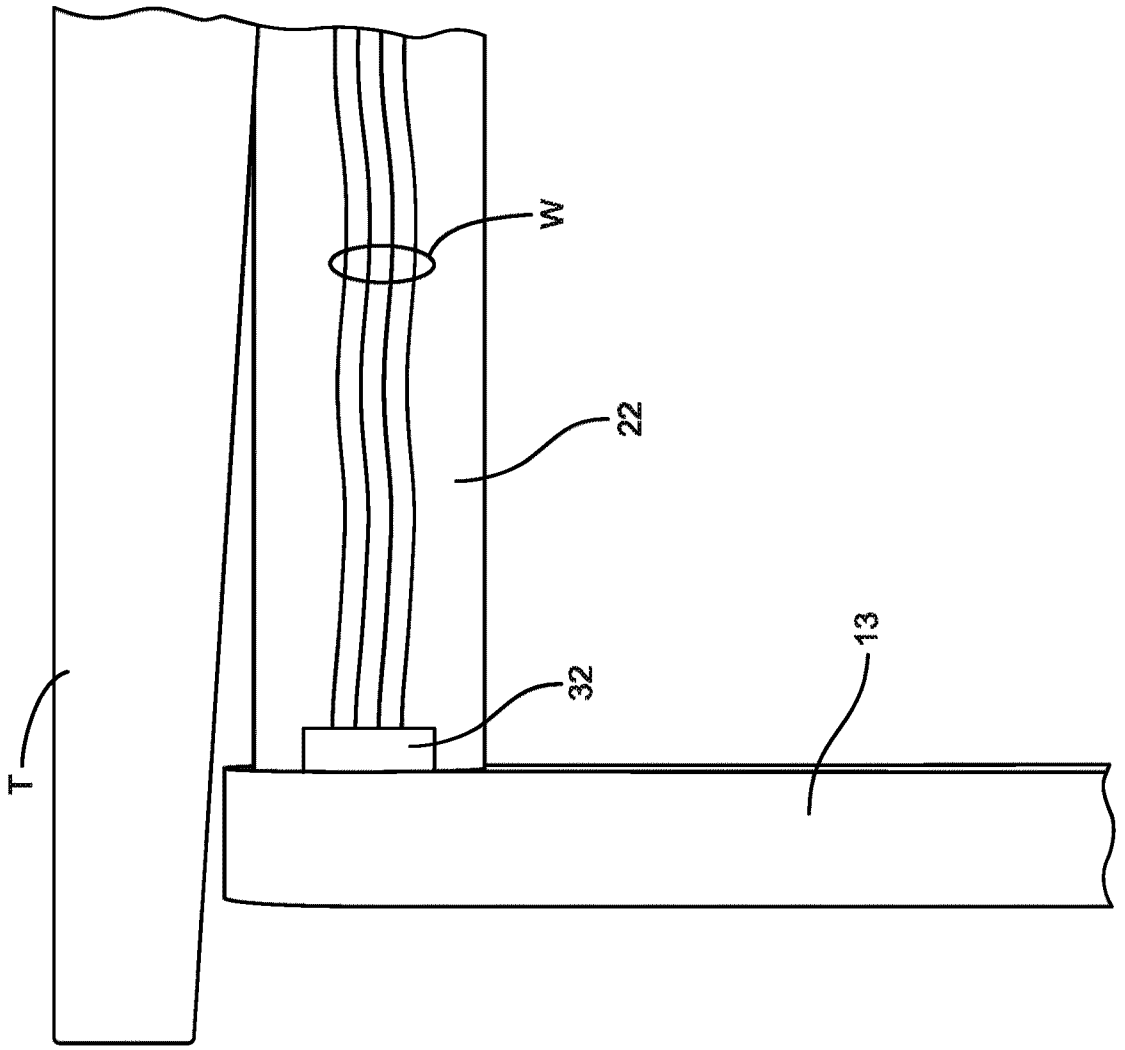


FIG. 6

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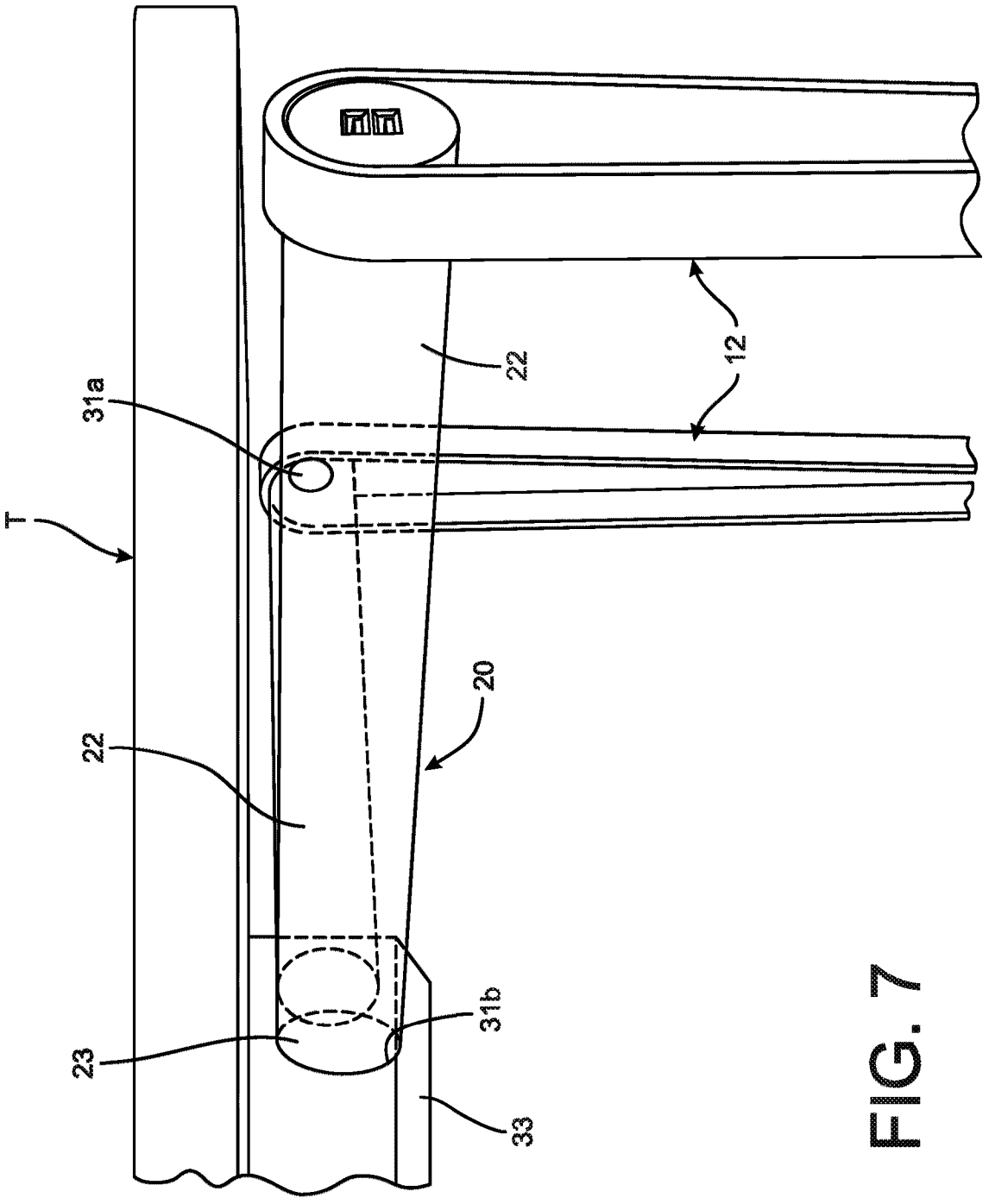


FIG. 7

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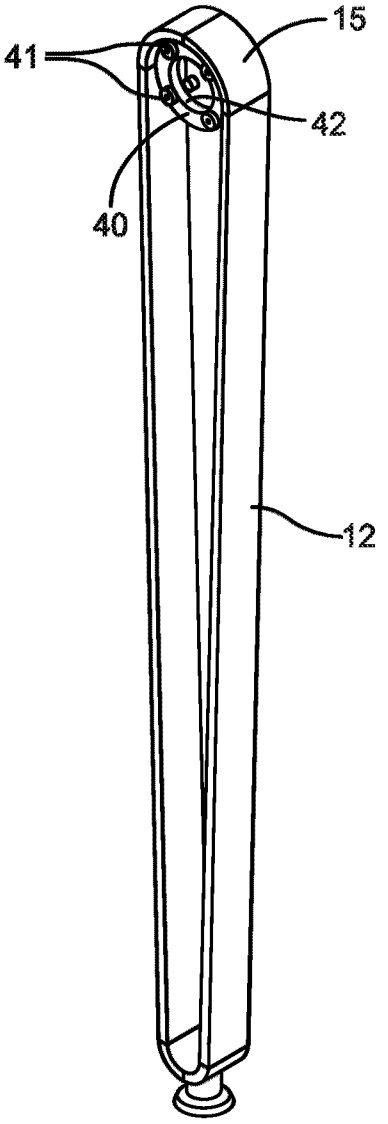


FIG. 8

Date Reçue/Date Received 2023-03-08

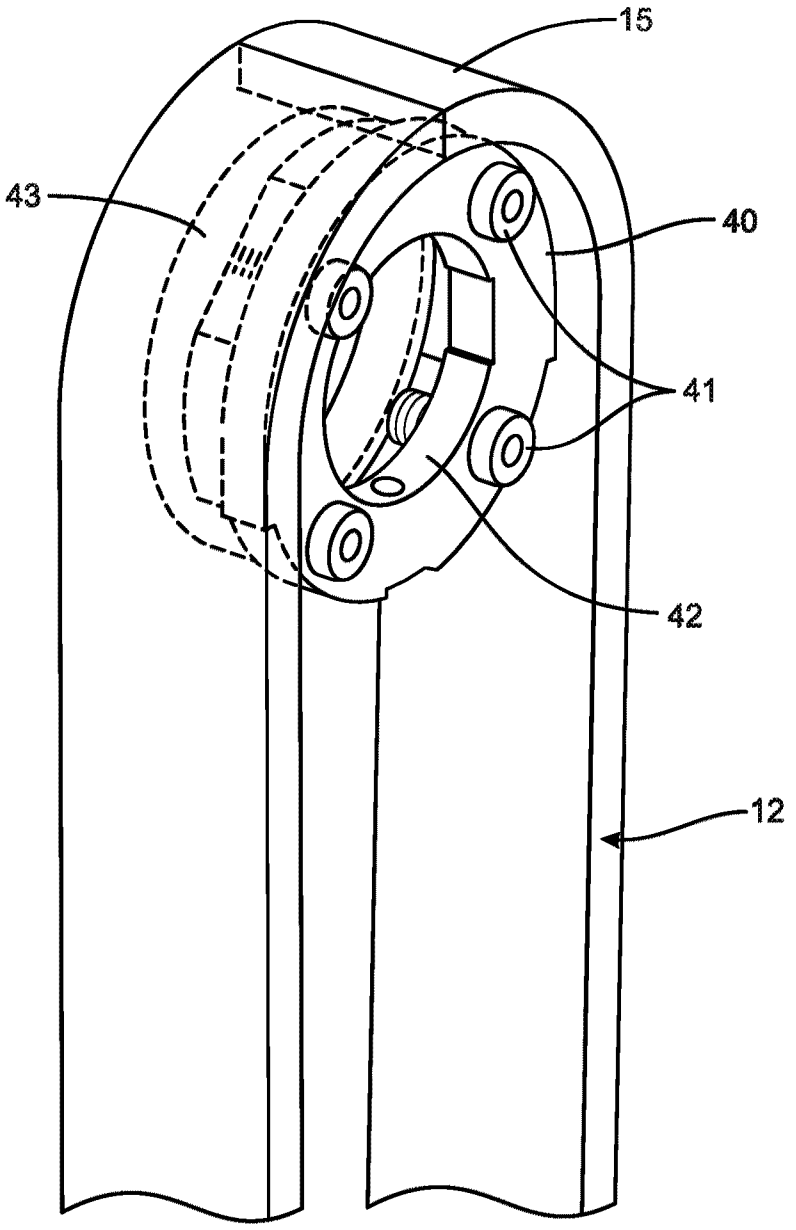


FIG. 9

Date Reçue/Date Received 2023-03-08

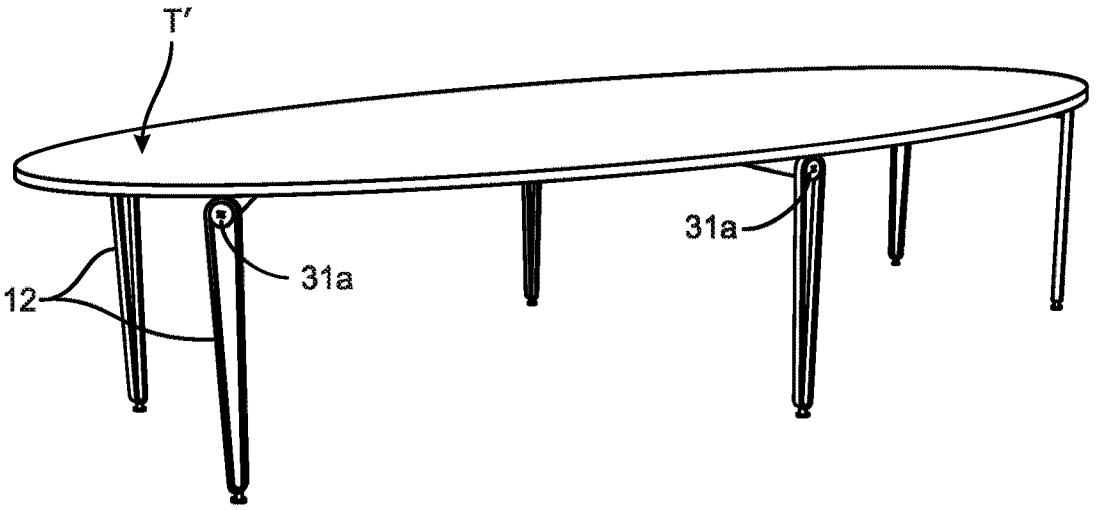
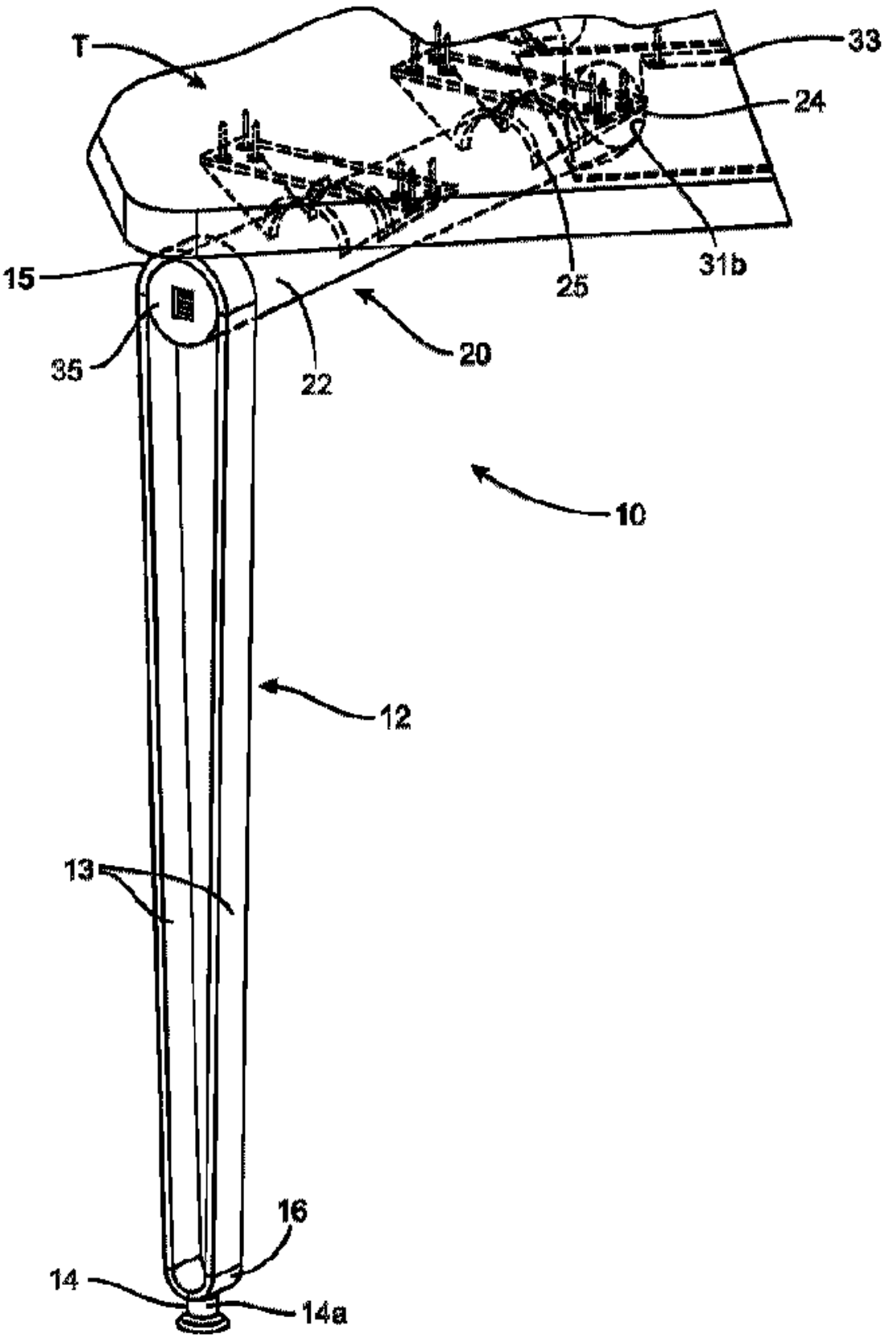


FIG. 10

Date Reçue/Date Received 2023-03-08


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31b
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