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(54) **PIPE FITTING STAND**

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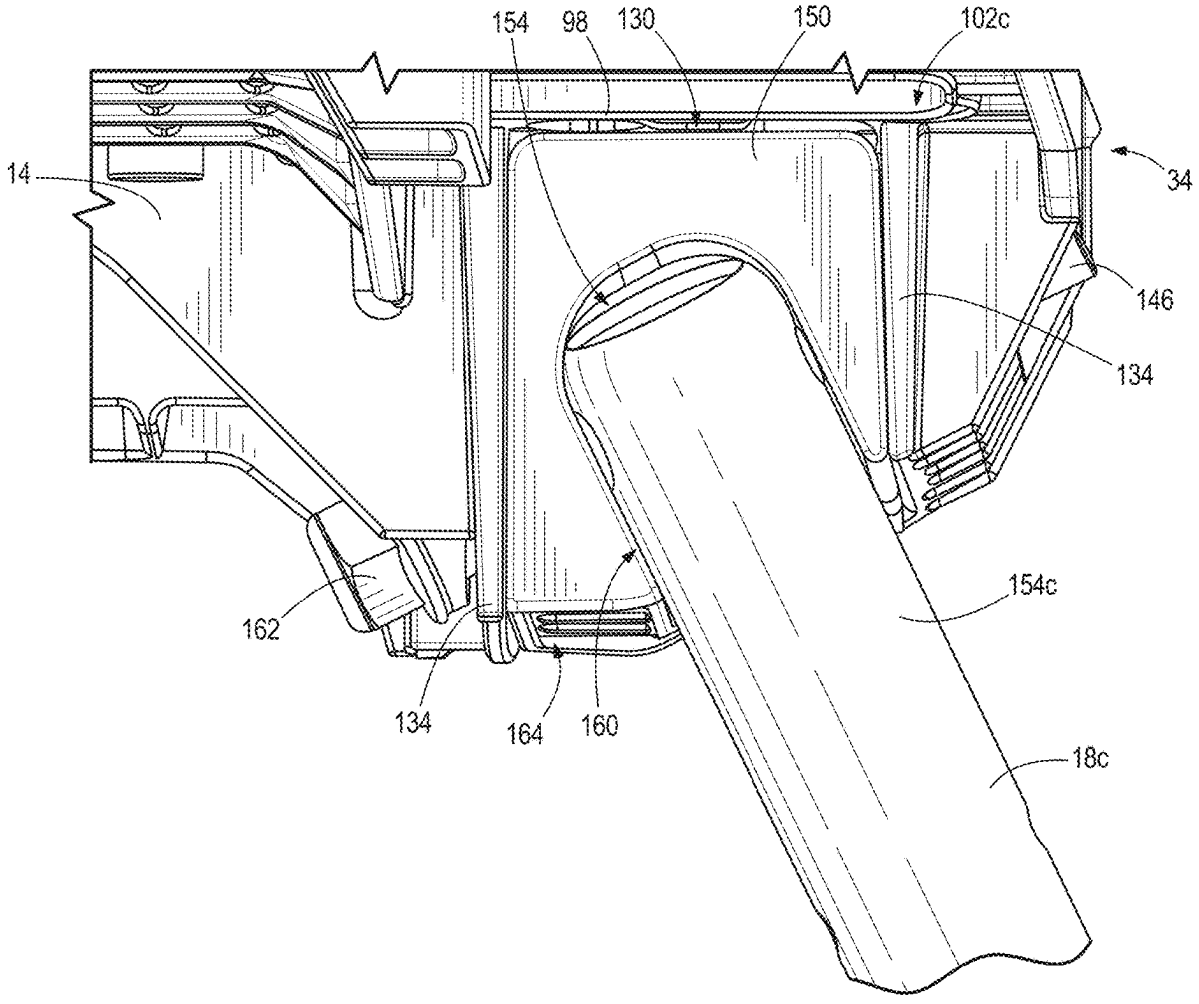
(57) **ABSTRACT**

A pipe fitting stand including a table having an upper side, a lower side opposite the upper side, and a cavity at least partially defined by parallel side walls extending from the lower side of the table. The pipe fitting stand includes at least one pipe support provided on the upper side of the table and configured to support a pipe on the table, an insert received within the cavity and including an arcuate wall, and a leg coupled to the table and extending outward from the cavity, the leg having an outer peripheral surface abutting the arcuate wall.



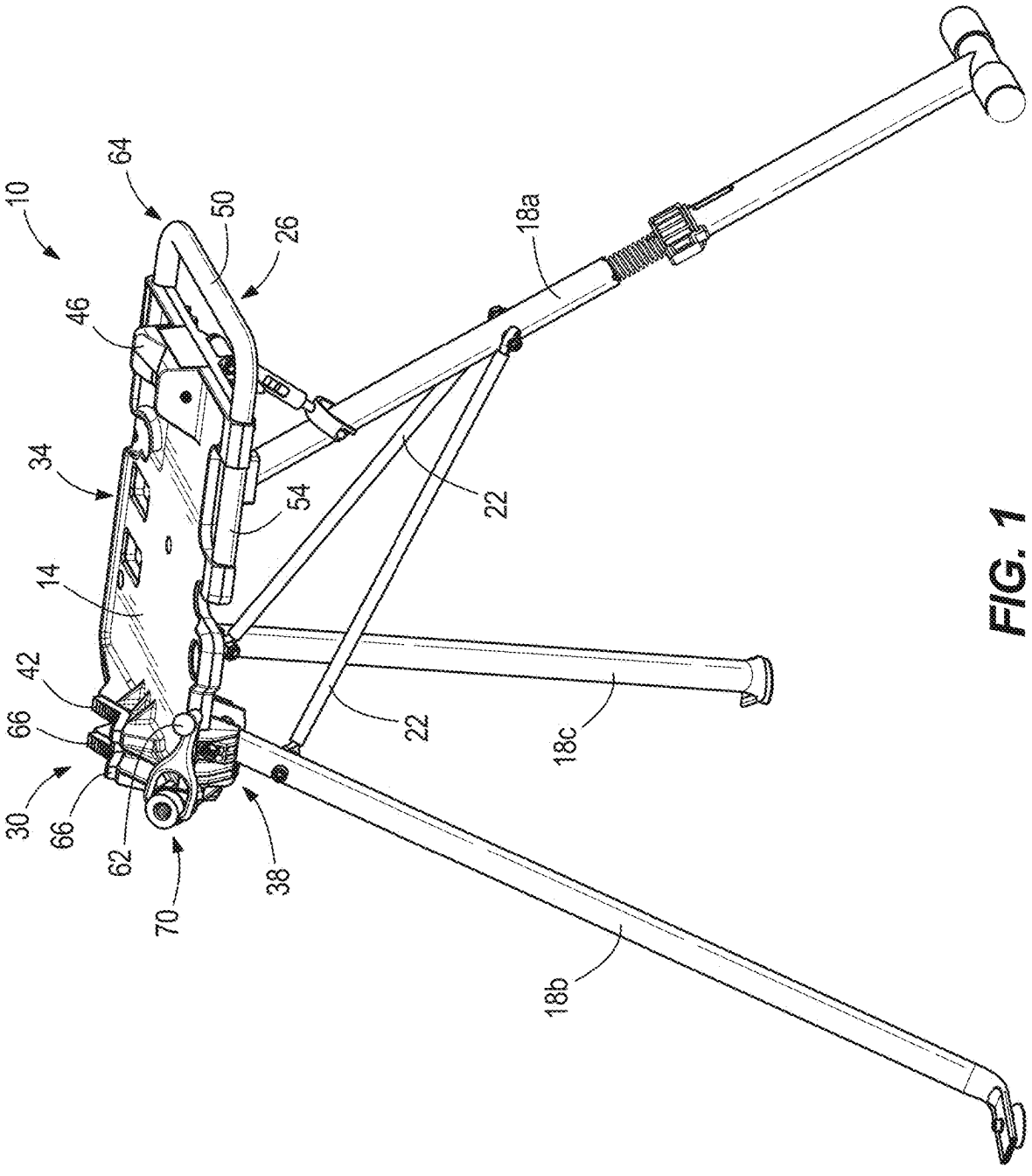


FIG. 1

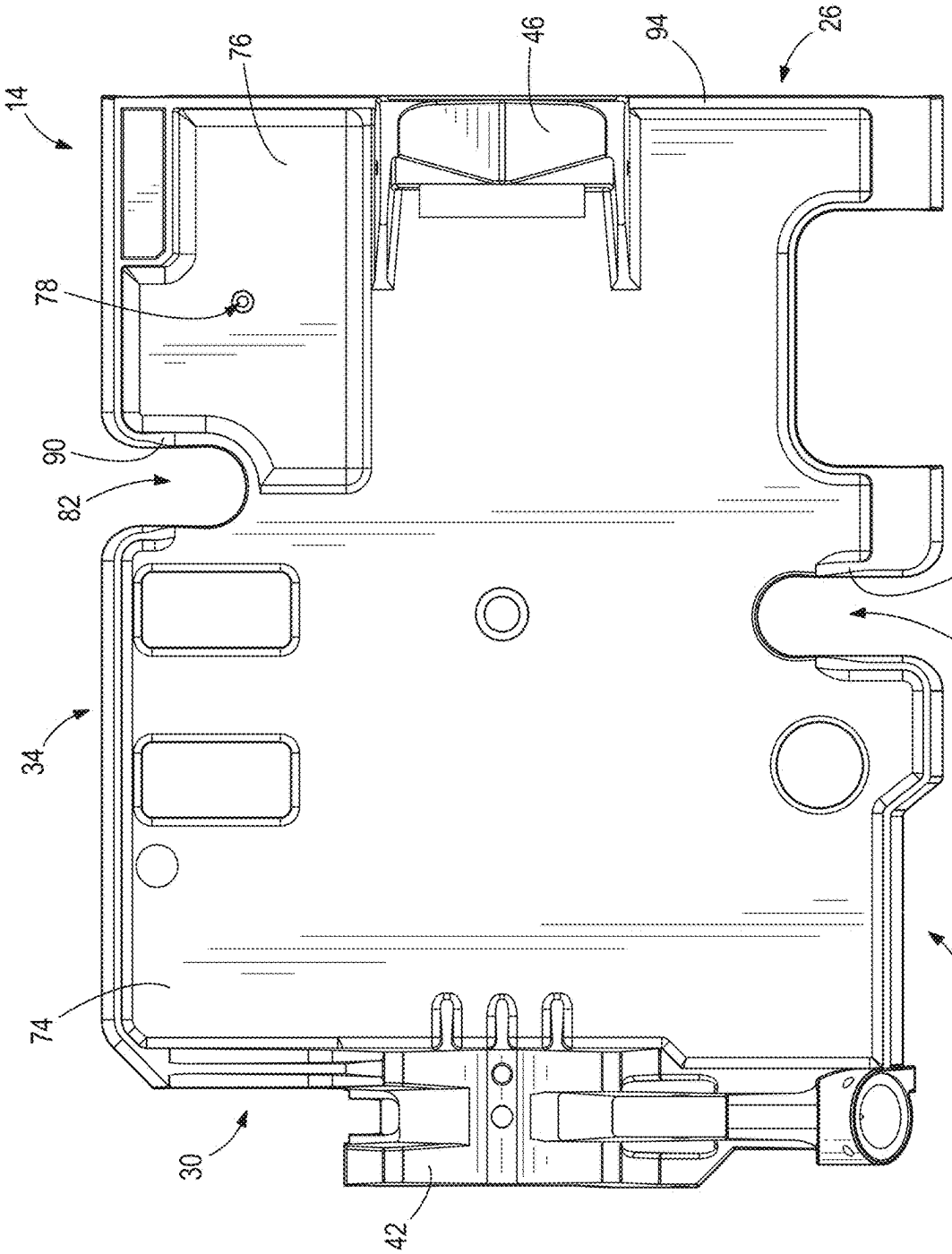
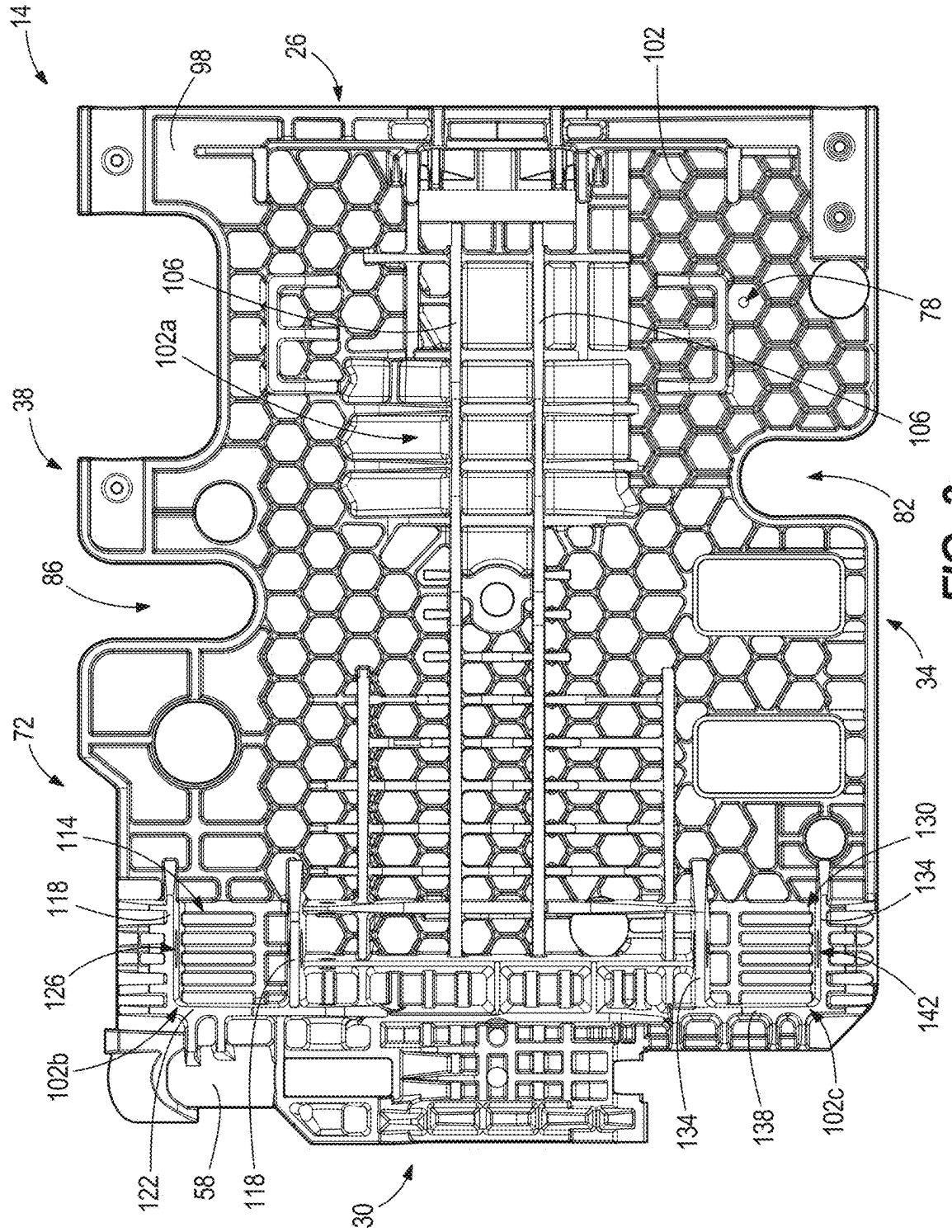


FIG. 2


14
98
26
102
106
78
102a
38
106
82
86
34
72
114
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118
134
126
142
102b
134
138
102c
122
58
118
30

FIG. 3

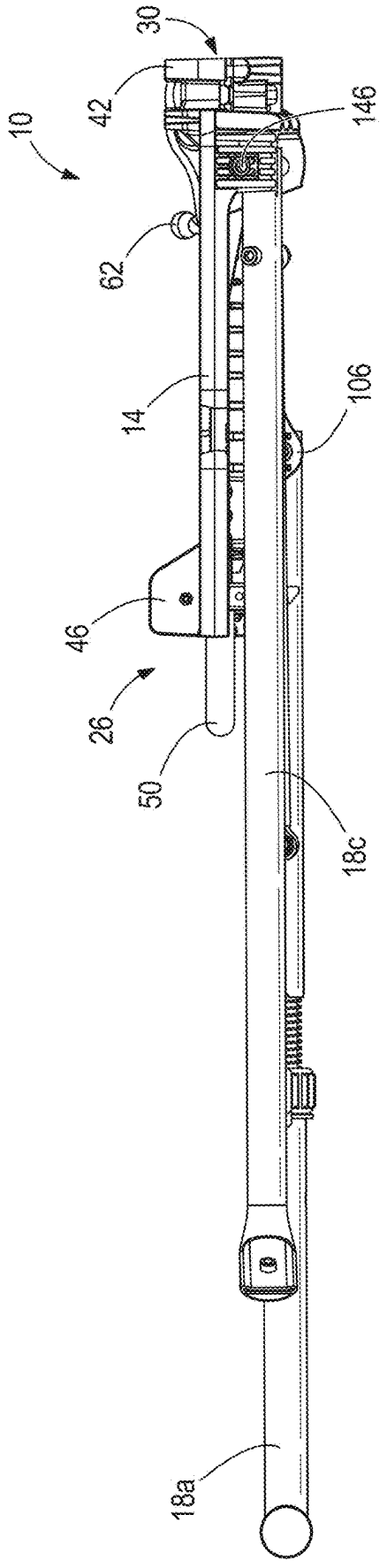

FIG. 4

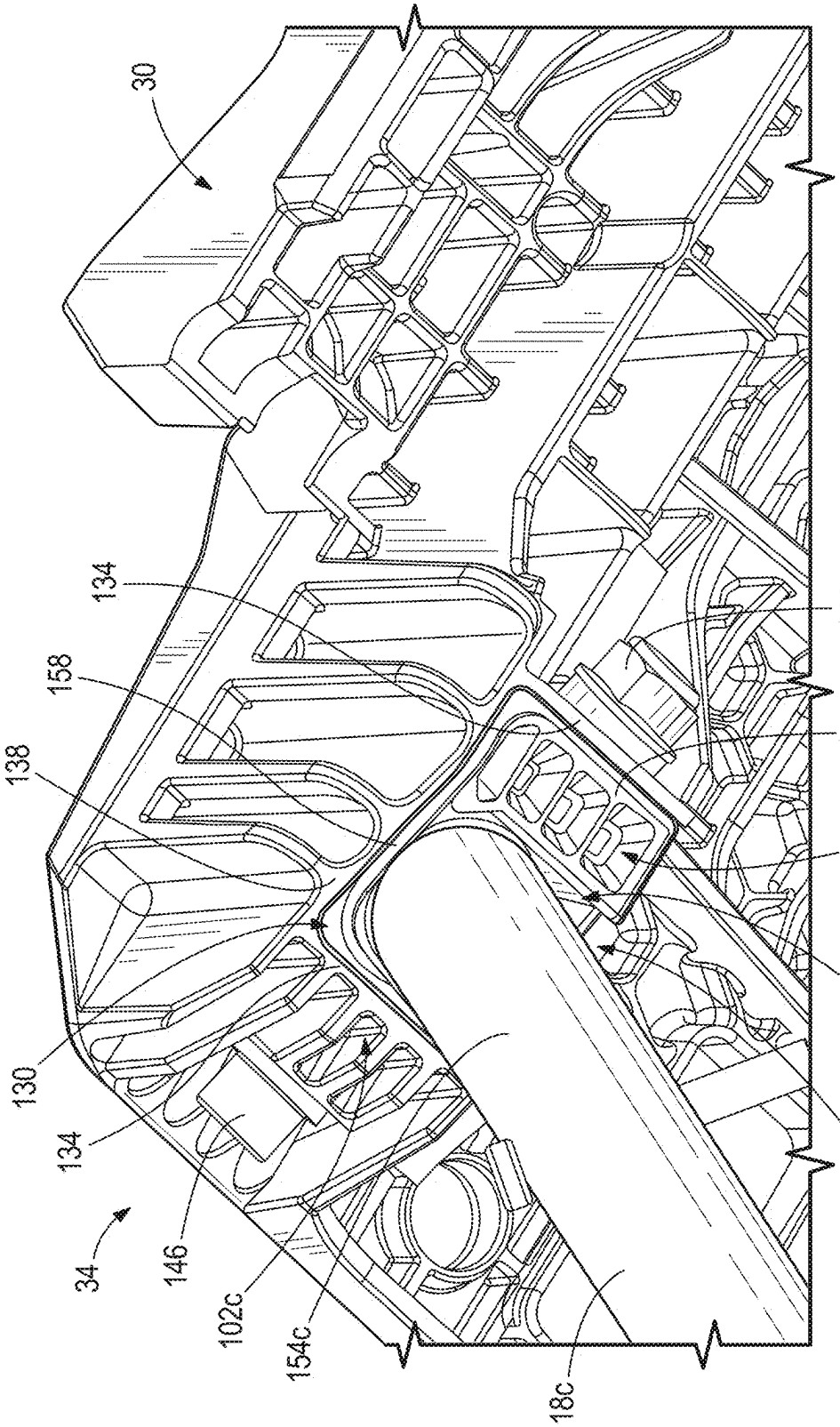

FIG. 5

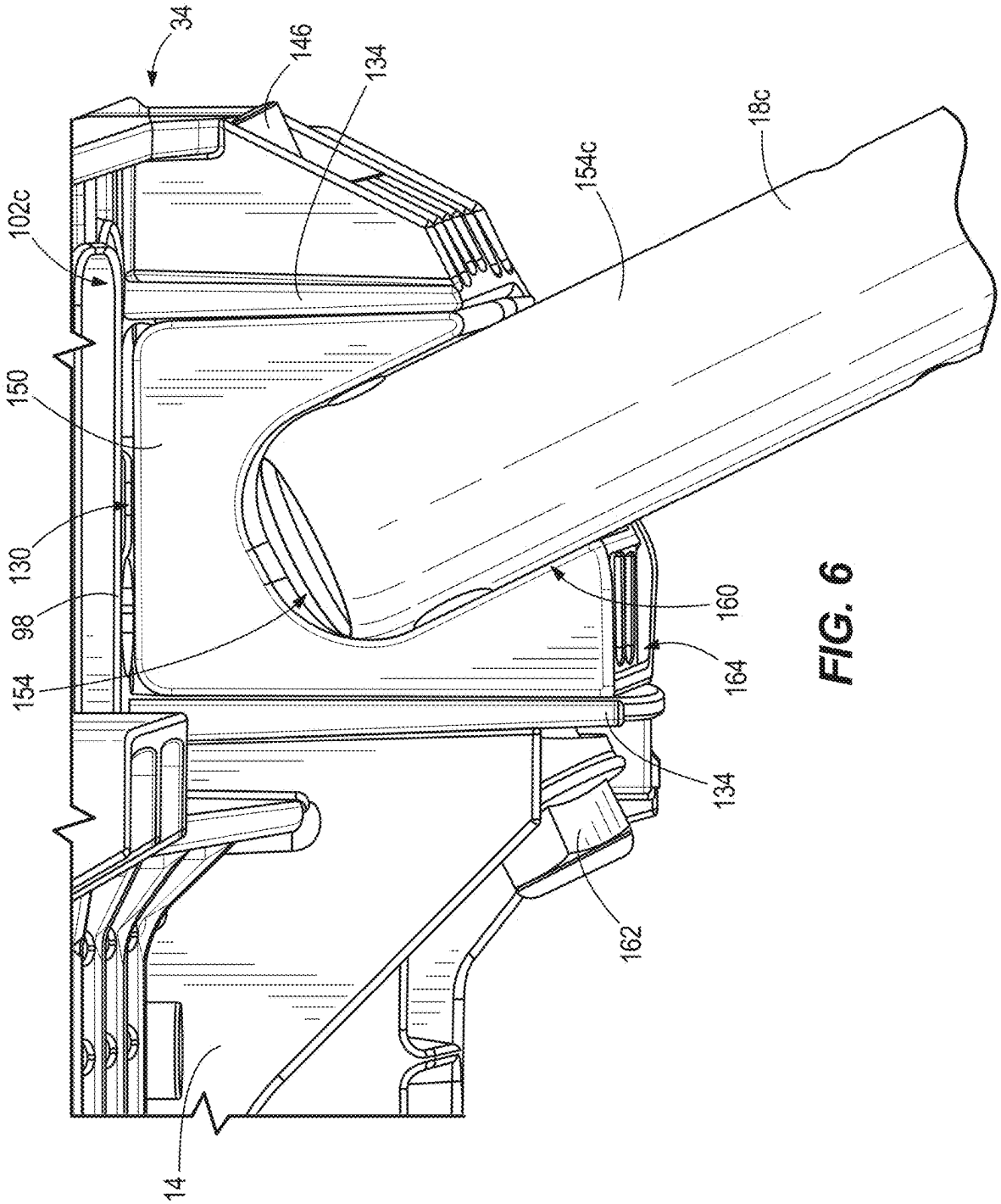

FIG. 6

PIPE FITTING STAND

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Patent Application No. 63/554,631, filed on Feb. 16, 2024, the entire contents of which are incorporated herein by reference.

FIELD OF THE INVENTION

[0002] The present invention relates to workpiece supporting stands, and more particularly to pipe fitting stands.

SUMMARY OF THE INVENTION

[0003] The present invention provides, in one aspect, a pipe fitting stand including a table having an upper side, a lower side opposite the upper side, and a cavity at least partially defined by parallel side walls extending from the lower side of the table. The pipe fitting stand includes at least one pipe support provided on the upper side of the table and configured to support a pipe on the table, an insert received within the cavity and including an arcuate wall, and a leg coupled to the table and extending outward from the cavity, the leg having an outer peripheral surface abutting the arcuate wall.

[0004] The present invention provides, in another aspect, a pipe fitting stand including a table having an upper side, a lower side opposite the upper side, and a table cavity at least partially defined by the lower side of the table. The pipe fitting stand includes an insert received within the table cavity and including an insert cavity partially defined by an arcuate wall, the insert cavity including an open end opposite the arcuate wall, and a cylindrical leg coupled to the table and received in the insert cavity, the leg having an outer peripheral surface abutting the arcuate wall.

[0005] The present invention provides, in another aspect, a pipe fitting stand including a table having an upper side and a lower side opposite the upper side, an insert provided on the lower side of the table and including an insert cavity partially defined by a wall, the insert cavity including an open end opposite the wall, and a leg pivotably coupled to the table between a deployed state and a folded state, the leg abutting the wall in the deployed state, and the leg extending through the open end in the folded state.

[0006] Other features and aspects of the invention will become apparent by consideration of the following detailed description and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] FIG. **1** is a perspective view of a pipe fitting stand in accordance with an embodiment of the invention, the pipe fitting stand shown in a deployed state.

[0008] FIG. **2** is a top view of a table of the pipe fitting stand of FIG. **1**.

[0009] FIG. **3** is a bottom view of the table of the pipe fitting stand of FIG. **1**.

[0010] FIG. **4** is a side view of the pipe fitting stand of FIG. **1** in a folded state.

[0011] FIG. **5** is an enlarged, bottom perspective view of the table of the pipe fitting stand of FIG. **1**.

[0012] FIG. **6** is another enlarged, bottom perspective view of the table of the pipe fitting stand of FIG. **1**.

[0013] Before any embodiments of the invention are explained in detail, it is to be understood that the invention is not limited in its application to the details of construction and the arrangement of components set forth in the following description or illustrated in the following drawings. The invention is capable of other embodiments and of being practiced or of being carried out in various ways. Also, it is to be understood that the phraseology and terminology used herein is for the purpose of description and should not be regarded as limiting.

DETAILED DESCRIPTION

[0014] FIG. **1** illustrates a pipe fitting stand **10** for supporting a pipe during a work operation. In the illustrated embodiment, the stand **10** includes a table **14** and three legs **18***a*-**18***c* extending from the table **14**. The legs **18***a*-**18***c* support the table **14** in an elevated position with respect to a support surface. The stand **10** also includes two links **22** pivotably coupling a first of the legs **18***a*, respectively, with the other two legs **18***b*, **18***c* to coordinate movement of the legs **18***a*-**18***c* as the stand **10** is reconfigured between a deployed state (shown in FIG. **1**) and a folded state (shown in FIG. **4**). The folded state can also be referred to as a stowed state.

[0015] With reference to FIG. **1**, the table **14** is formed as a single, monolithic component. The table **14** includes a first side **26** (also referred to as a first end **26**) and a second side **30** (also referred to a second end **30**) opposite the first side **26**. The first side **26** is proximate the first leg **18***a*, and the second side **30** is proximate a second leg **18***b* and a third leg **18***c*. The table **14** also includes a third side **34** and a fourth side **38** opposite the third side **34**. The third and fourth sides **34**, **38** each extend between the first and second sides **26**, **30**. Together, the first, second, third, and fourth sides **26**, **30**, **34**, **38** define a generally rectangular shape of the table **14**. A vise **42** is positioned on the second side **30** of the table **14**. The vise **42** supports and clamps a pipe (not shown) to the table **14**. A support **46** is positioned on the first side **26** of the table **14**. Stated another way, the support **46** is positioned on a side (or end) of the table **14** opposite the vise **42**. The support **46** additionally supports the pipe. The stand **10** also includes an operating handle **50** that extends from the first side **26** of the table **14**. A user can grasp the operating handle **50** during operation of the stand **10**. The operating handle **50** also includes a portion that extends along the fourth side **38** of the table **14**. The portion of the operating handle **50** extending along the fourth side **38** can be referred to as a side handle **54**. The side handle **54** can be used during transport or operation of the stand **10**. When the stand **10** is in the deployed state, tools can be stored on the operating handle **50** (including the side handle **54**). The table **14** can include a supplemental grip **58** (shown in FIG. **3**) positioned below the vise **42**. The supplemental grip **58** can be grasped during operation. A vise handle **62** is positioned on the fourth side **38** of the table **14**. The vise handle **62** is advantageously positioned on the same side of the table **14** as the side handle **54** (i.e., the fourth side **38**). More specifically, when the stand **10** is carried in its folded state, the vise handle **62** is on an opposite side of the table **14** as the ground. This protects the vise handle **62** in case the stand **10** is dropped. The table **14**, the handle **50**, the vise handle **62**, and other separate features mounted to the table **14** collectively form a table assembly **64**.

[0016] With continued reference to FIG. **1**, the vise **42** includes a pair of jaws **66** for supporting the pipe and a clamp assembly **70** for applying a clamping force to (adjustably clamping) the pipe within the jaws **66**. The clamp assembly **70** includes the vise handle **62** and a chain screw assembly (not shown) coupled together (e.g., by a nut). The second side **30** of the table **14** can include, for example, a cut-out **72** (shown in FIG. **2**) to allow the vise handle **62** to rotate without interfering with the table **14**. During use, a user may place the pipe on the jaws **66** and support **46** and wrap a chain (not shown) of the chain screw assembly around the pipe. To secure the chain, the free end of the chain is temporarily latched to the table **14** on an opposite side as the clamp assembly **70**. The user then rotates the vise handle **62**, thereby translating the chain screw away from the jaws **66**, tensioning the chain and tightening it around the pipe.

[0017] With reference to FIG. **2**, an upper side **74** of the table **14** includes a recessed tray **76** positioned adjacent the first side **26**. The recessed tray **76** includes an aperture **78** extending through the table **14**. During operation, the tray **76** can hold utensils (e.g., pens, pencils, etc.), and liquid may drain through the aperture **78**. The table **14** also includes a first slot **82** extending through the third side **34** of the table **14**, and a second slot **86** extending through the fourth side **38** of the table **14**. The first and second slots **82**, **86** are shaped and sized to receive a handle of a power tool (e.g., a band saw, a hammer, etc.). The first and second slots **82**, **86** each include a lip **90** extending around a periphery of the slots **82**, **86**. The lips **90** are slanted inwardly and ramp down to be flush with the table **14**, such that the lips **90** can retain the power tool handle in the slots **82**, **86**. Additionally, the table **14** includes a rim **94** extending around a perimeter of the table **14**. The rim **94** is raised above an uppermost surface of the table **14** such that a user may hang power tools and other items on the rim **94**.

[0018] With reference to FIG. **3**, an underside **98** (also referred to as a lower side **98**) of the table **14** includes a honeycomb structure **102**, which reduces the weight and increases the strength of the stand **10**. The underside **98** of the table **14** also includes a first mounting portion **102***a*, a second mounting portion **102***b*, and a third mounting portion **102***c*. The first mounting portion **102***a* is positioned in a central portion of the table **14**. The first mounting portion **102***a* includes a pair of first walls **106** that extend between the first and second sides **26**, **30** of the table **14**. Each first wall **106** includes a first aperture (not shown). A first fastener (not shown) extends through each first aperture and the first leg **18***a* to pivotably couple the first leg **18***a* to the first mounting portion **102***a*, which is described in further detail below.

[0019] The second mounting portion **102***b* includes a second cavity **114** (also referred to as a second table cavity **114**). The second cavity **114** is defined between a pair of second side walls **118**, a second rear wall **122**, and the underside **98** of the table **14**. Each second side wall **118** extends from the underside **98** of the table **14** and between the first and second sides **26**, **30** of the table **14**. More specifically, each second side wall **118** extends perpendicular from (or normal to) the underside **98** of the table **14**. The second side walls **118** are parallel with each other. As such, the pair of second side walls **118** can also be referred to as a pair of parallel second side walls **118**. The second rear wall **122** extends from the underside **98** of the table **14** and between the third and fourth sides **34**, **38** of the table **14**. The second rear wall **122** extends perpendicular from the underside **98** of the table **14**. The second rear wall **122** extends generally parallel to the second side **30** of the table **14**. The second rear wall **122** is oriented perpendicular to each second side wall **118**. Each second side wall **118** includes a second aperture **126**. A second fastener (not shown) extends through each second aperture **126** and the second leg **18***b* to pivotably couple the second leg **18***b* to the second mounting portion **102***b*, which is described in further detail below.

[0020] The third mounting portion **102***c* includes a third cavity **130** (also referred to as a third table cavity **130**). The third cavity **130** is defined between a pair of third side walls **134**, a third rear wall **138**, and the underside of the table **14**. Each third side wall **134** extends from the underside **98** of the table **14** and between the first and second sides **26**, **30** of the table **14**. More specifically, each third side wall **134** extends perpendicular from (or normal to) the underside **98** of the table **14**. The third side walls **134** are parallel with each other. As such, the pair of third side walls **134** can also be referred to as a pair of parallel third side walls **134**. The third rear wall **138** extends from the underside **98** of the table **14** between the third and fourth sides **34**, **38** of the table **14**. The third rear wall **138** extends perpendicular from the underside **98** of the table **14**. The third rear wall **138** extends generally parallel to the second side **30** of the table **14**. The third rear wall **138** is oriented perpendicular to each third side wall **134**. Each third side wall **134** includes a third aperture **142**. A third fastener **146** (best shown in FIG. **5**) extends through each third aperture **142** and the third leg **18***c* to pivotably couple the third leg **18***c* to the third mounting portion **102***c*, which is described in further detail below. As shown in FIG. **2**, the second and third mounting portions **102***b*, **102***c* are substantially identical. However, the second mounting portion **102***b* is on an opposite side of the table **14** as the third mounting portion **102***c*, such that the second and third mounting portions **102***b*, **102***c* are symmetrical about a longitudinal axis of the table **14**.

[0021] With reference to FIGS. **1** and **4**, each of the legs **18***a*-**18***c* is separately pivotably coupled to the table **14** between the deployed state (shown in FIG. **1**) and the folded state (shown in FIG. **4**). However, as mentioned above, the links **22** interconnect the legs **18***a*, **18***b* and the legs **18***a*, **18***c*, respectively, such that pivoting movement of the leg **18***a* relative to the table **14** causes the other legs **18***b*, **18***c* to also pivot relative to the table **14**. In the illustrated embodiment, each leg **18***a*-**18***c* extends from the table **14** in a different direction when in the deployed state (i.e., each of the legs **18***a*-**18***c* is non-parallel with the others and obliquely oriented relative to the table **14**), and each leg **18***a*-**18***c* extends from the table **14** in the same direction when in the folded state. In other embodiments, the legs **18***a*-**18***b* can be aligned in a different configuration in the deployed and folded states.

[0022] With reference to FIGS. **5** and **6**, the stand **10** includes an insert **150** (also referred to as a third insert **150**) received within the third cavity **130** of the third mounting portion **102***c*. The insert **150** is in contact with the underside **98** of the table **14**, both third side walls **134**, and the third rear wall **138**. The insert **150** includes an insert cavity **154**, which receives the third leg **18***c*. The insert cavity **154** is shaped to support the third leg **18***c* when in the deployed position to prevent the third leg **18***c* from pivoting beyond the deployed position shown in FIG. **5**. In the illustrated embodiment, the third leg **18***c* extends outward from the

table **14**. Further, the third leg **18***c* extends obliquely outward from the table **14** in the deployed position. Accordingly, the insert cavity **154** extends in a similar oblique angle relative to the table **14** to support the third leg **18***c*. The insert cavity **154** is at least partially defined by an arcuate wall **158**, and the third leg **18***c* includes an outer peripheral surface **154***c* that is in contact with the arcuate wall **158** when the third leg **18***c* is in the deployed position. The arcuate wall **158** is shaped similarly as the outer peripheral surface **154***c* of the third leg **18***c*. In the illustrated embodiment, the outer peripheral surface **154***c* of the third leg **18***c* is cylindrical and has a first radius. The arcuate wall **158** of the insert cavity **154** has a second radius that is nominally equal to the first radius. In some embodiments, the first and second radii can be identical. In other embodiments, the outer peripheral surface **154***c* and the arcuate wall **158** can have an identical curvature. In these embodiments, the support provided by the insert **150** to the third leg **18***c* is increased because the arcuate wall **158** contacts the third leg **18***c* over 180 degrees around the outer peripheral surface **154***c*. Stated another way, the outer peripheral surface **154***c* abuts the arcuate wall **158** around 180 degrees of radial contact about the third leg **18***c*. In other embodiments, the arcuate wall **158** and the outer peripheral surface **154***c* can have at least 180 degrees of radial contact (e.g., 195 degrees, 215 degrees, 270 degrees, etc.). Alternatively, the arcuate wall **158** and the outer peripheral surface **154***c* can have less than 180 degrees of radial contact (e.g., 90 degrees, 135 degrees, 165 degrees).

[0023] The arcuate wall **158** of the insert **150** is a closed end of the insert cavity **154**. The insert cavity **154** also includes an open end **160** opposite the arcuate wall **158** (or the closed end) of the insert cavity **154**. The open end **160** provides clearance for the third leg **18***c* to pivot. In the illustrated embodiment, the third leg **18***c* extends through the open end **160** when in the stowed position and is positioned away from the open end **160** when in the deployed position. In other embodiments, the third leg **18***c* can extend through the open end **160** when in the deployed and the stowed positions.

[0024] With continued reference to FIGS. **5** and **6**, the insert **150** includes a bore (not shown) through which the third fastener **146** extends. The third fastener **146** extends through the third leg **18***c*, the third apertures **142**, and the insert **150** to pivotably couple the third leg **18***c* to the table **14** and the insert **150**. In the illustrated embodiment, the third fastener **146** is obliquely oriented relative to the third side walls **134** and the underside **98** of the table **14**. Stated another way, the third fastener **146** extends generally perpendicular to a longitudinal axis defined by the third leg **18***c*. The third fastener **146** is coupled to a nut **162** (also referred to as a third nut **162**) to secure the fastener **146** relative to the table **14**. The insert **150** includes a plurality of recesses **164**. The recesses **164** can reduce the weight and increases the strength of the insert **150**. In other embodiments, the insert **150** can be a solid component (outside of the insert cavity **154**). In the illustrated embodiment, the insert **150** is composed of a rigid material (e.g., plastic, steel, aluminum, etc.). In other examples of embodiments, the insert **150** can be composed of a resilient material (e.g., rubber, silicone, etc.) or a composite material.

[0025] When in the deployed state, the legs **18***a*-**18***c* support the weight of the stand **10**, the pipe, and any additional materials placed on the stand **10**. The weight is transferred to each leg **18***a*-**18***c*. If, for example, the third cavity **130** did not include the insert **150**, the weight of the table **14** and any objects supported thereon would only be transferred to the third leg **18***c* by the third fastener **146**. The third fastener **146** contacts the third leg **18***c* at relatively few positions. More specifically, the third fastener **146** contacts the third leg **18***c* at two apertures in the third leg **18***c* through which the third fastener **146** extends. This undesirably concentrates all the weight transfer over a small area of the third leg **18***c*. Beneficially, the insert **150** distributes the load applied to the third leg **18***c* over a larger surface, thereby reducing stress applied to the third leg **18***c* when the table **14** is loaded. As a result, the third leg **18***c*, and thus the entire stand **10**, can support more weight. In some embodiments, the insert **150** can double the amount of weight that the stand **10** can support.

[0026] The stand **10** also includes a second insert (not shown) positioned within the second cavity **114** of the second mounting portion **102***b*. For the sake of brevity, only the third insert **150** has been described and illustrated. However, it should be appreciated that the second insert includes identical features as the third insert **150** but is symmetrical to the third insert **150** about a longitudinal axis of the table **14**. The second insert is coupled to the second mounting portion **102***b* by a second fastener (not shown) and a second nut (not shown). The second fastener and nut are identical to the third fastener **146** and the nut **162**, respectively.

[0027] Although the invention has been described in detail with reference to certain preferred embodiments, variations and modifications exist within the scope and the spirit of one or more independent aspects of the invention as described.

What is claimed is:

1. A pipe fitting stand comprising:

a table including

an upper side,

a lower side opposite the upper side, and

a cavity at least partially defined by parallel side walls extending from the lower side of the table;

at least one pipe support provided on the upper side of the table and configured to support a pipe on the table;

an insert received within the cavity and including an arcuate wall; and

a leg coupled to the table and extending outward from the cavity, the leg having an outer peripheral surface abutting the arcuate wall.

2. The pipe fitting stand of claim **1**, wherein the outer peripheral surface of the leg is cylindrical and has a first radius, and wherein the arcuate wall has a second radius that is nominally equal to the first radius.

3. The pipe fitting stand of claim **2**, wherein the outer peripheral surface of the leg abuts the arcuate wall around at least 180 degrees of the leg.

4. The pipe fitting stand of claim **2**, wherein the outer peripheral surface of the leg abuts the arcuate wall around at least 90 degrees of the leg.

5. The pipe fitting stand of claim **1**, wherein the leg is a first leg of a plurality of legs, and wherein the plurality of legs includes a second leg coupled to the table.

6. The pipe fitting stand of claim **5**, wherein the cavity is a first cavity, the insert is a first insert, and the leg is a first leg, the parallel side walls are first parallel side walls, and wherein the pipe fitting stand includes:

a second cavity at least partially defined by second parallel side walls extending from the lower side of the table,

a second insert received within the second cavity and including an arcuate wall, and

a second leg extending outward from the second cavity and having an outer peripheral surface abutting the arcuate wall of the second insert.

7. The pipe fitting stand of claim **1**, further comprising a fastener extending through the table, the insert, and the leg to pivotably couple the leg to the table and the insert.

8. The pipe fitting stand of claim **1**, wherein the leg is pivotably coupled to the table between a deployed position and a stowed position.

9. The pipe fitting stand of claim **1**, wherein the at least one pipe support includes a vise positioned at a first end of the table and an additional support positioned at an opposite, second end of the table.

10. The pipe fitting stand of claim **9**, wherein the vise includes a plurality of jaws and a clamp assembly having a handle and a chain screw assembly configured to adjustably clamp the pipe against the jaws.

11. The pipe fitting stand of claim **1**, wherein:

the insert includes an insert cavity at least partially defined by the arcuate wall,

the arcuate wall is a closed end of the insert cavity, and

the insert cavity includes an open end opposite the closed end through which the leg extends when in a stowed position relative to the table.

12. A pipe fitting stand comprising:

a table including

an upper side,

a lower side opposite the upper side, and

a table cavity at least partially defined by the lower side of the table;

an insert received within the table cavity and including an insert cavity partially defined by an arcuate wall, the insert cavity including an open end opposite the arcuate wall; and

a cylindrical leg coupled to the table and received in the insert cavity, the leg having an outer peripheral surface abutting the arcuate wall.

13. The pipe fitting stand of claim **12**, wherein the outer peripheral surface of the leg has a first radius, and wherein the arcuate wall has a second radius that is nominally equal to the first radius.

14. The pipe fitting stand of claim **12**, wherein the outer peripheral surface of the leg abuts the arcuate wall around at least 180 degrees of the leg.

15. The pipe fitting stand of claim **12**, wherein the outer peripheral surface of the leg abuts the arcuate wall around at least 90 degrees of the leg.

16. A pipe fitting stand comprising:

a table including an upper side and a lower side opposite the upper side;

an insert provided on the lower side of the table and including an insert cavity partially defined by a wall, the insert cavity including an open end opposite the wall; and

a leg pivotably coupled to the table between a deployed state and a folded state, the leg abutting the wall in the deployed state, and the leg extending through the open end in the folded state.

17. The pipe fitting stand of claim **16**, wherein the insert cavity extends obliquely from the table, and wherein the leg extends obliquely from the table in the deployed state.

18. The pipe fitting stand of claim **16**, wherein:

the table includes parallel side walls extending from the lower side of the table,

the insert includes a bore, and

a fastener extends through the parallel side walls and the bore to pivotably couple the leg to the table.

19. The pipe fitting stand of claim **16**, wherein:

the table includes a pair of side walls extending from the lower side of the table and a rear wall extending from the lower side of the table,

the rear wall extends between the pair of side walls, and

the open end of the insert is positioned opposite the rear wall.

20. The pipe fitting stand of claim **19**, wherein:

the table includes a first end and a second end opposite the first end,

the rear wall is positioned adjacent the second end and oriented parallel with the second end, and

the pair of side walls are oriented perpendicular with the rear wall.

* * * * *