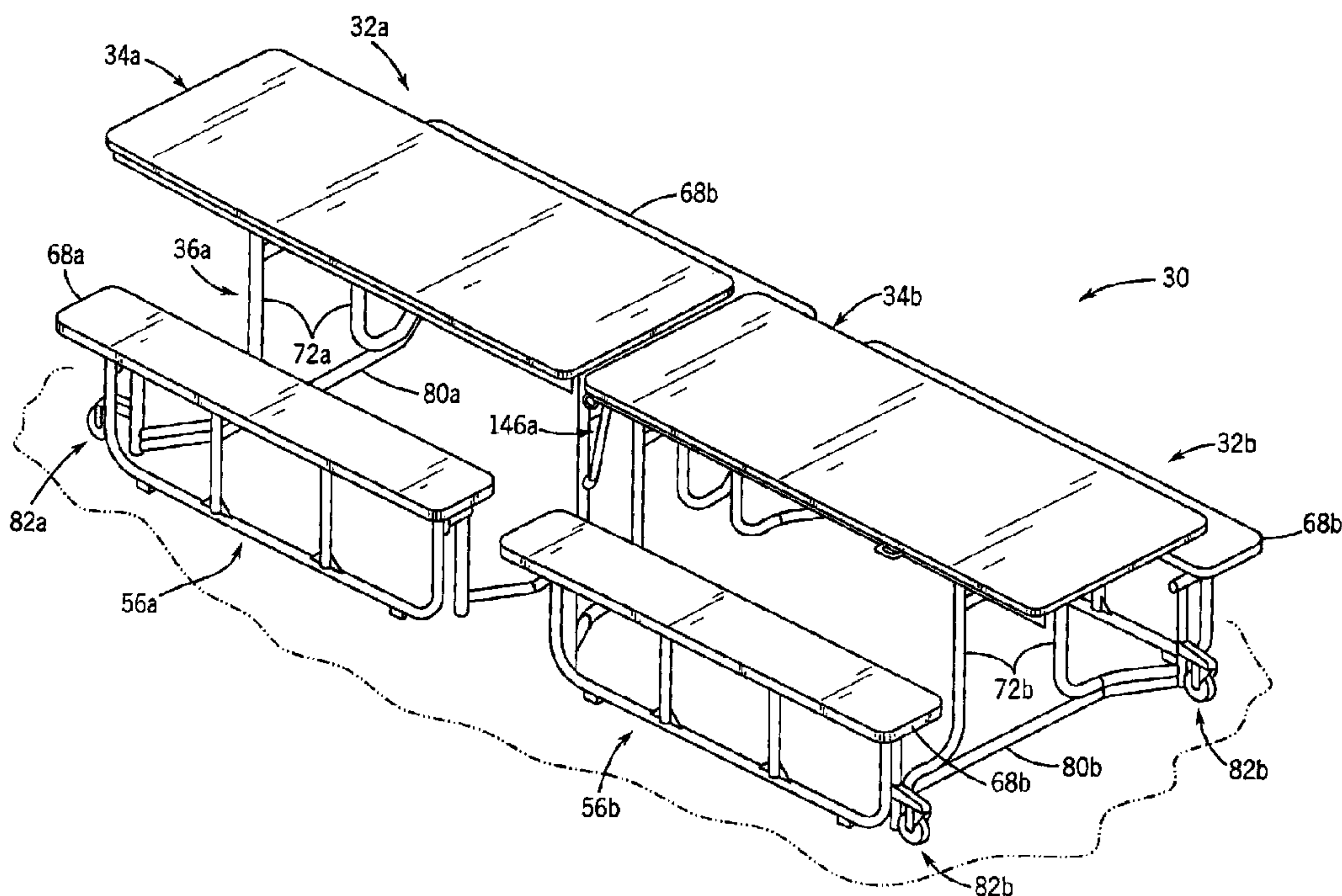




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(57) **Abrégé/Abstract:**

A folding sectional table assembly includes a pair of table sections, each of which includes a frame assembly and a table top. Each frame assembly includes inner and outer leg assemblies, and each leg assembly has an upper tubular member pivotably mounted at its ends relative to a pair of apron members secured to the underside of the table top, for providing pivoting movement of the leg assembly relative to the table top. A latch arrangement selectively maintains the table sections in the folded, storage position, and includes a latch member pivotably mounted to one of the table sections and a catch member stationarily mounted to the other of the table sections. A latch actuator is interconnected between the latch member and the apron members, for disengaging the latch member from the catch member when it is desired to move the table sections away from the folded, storage position. The latch actuator includes an actuator area located adjacent each side of the table assembly, for enabling an operator to easily access the actuator member for disengaging the latch member without having to reach between the table sections when in the folded, storage position.

ABSTRACT

A folding sectional table assembly includes a pair of table sections, each of which includes a frame assembly and a table top. Each frame assembly includes inner and outer leg assemblies, and each leg assembly has an upper tubular member pivotably mounted at its ends relative to a pair of apron members secured to the underside of the table top, for providing pivoting movement of the leg assembly relative to the table top. A latch arrangement selectively maintains the table sections in the folded, storage position, and includes a latch member pivotably mounted to one of the table sections and a catch member stationarily mounted to the other of the table sections. A latch actuator is interconnected between the latch member and the apron members, for disengaging the latch member from the catch member when it is desired to move the table sections away from the folded, storage position. The latch actuator includes an actuator area located adjacent each side of the table assembly, for enabling an operator to easily access the actuator member for disengaging the latch member without having to reach between the table sections when in the folded, storage position.

FOLDING ROLL-AWAY TABLE

This application is a divisional application of co-pending application 2,322,054, filed October 3, 2000.

BACKGROUND AND SUMMARY OF THE INVENTION

This invention relates to tables, and more particularly to a folding roll-away table assembly in which a pair of table sections are foldably interconnected with each other and are movable between a folded, storage position and an unfolded, operative position.

Folding sectional roll-away table assemblies are commonly used in applications where table space is required on an intermittent basis. One common application is school cafeterias, gymnasiums or multi-purpose rooms, which require table space for eating or other activities at certain times, and which are often used at other times for activities which do not require table space. Folding sectional tables are commonly used in such applications, and can be quickly folded and rolled away for storage in order to clear the area for uses in which table space is not required. Typically, folding sectional tables of this type have a frame which carries a predetermined number of seats or benches, so that it is not necessary to set up and knock down chairs when table space is required.

Numerous folding table assemblies are known in the art, and various folding mechanisms and assist arrangements are known for providing movement of the table assembly between its folded, storage position and its unfolded, operative position. For example, it is known to provide one or more torsion bars interconnected with the frame or legs of the table. In the past, however, torsion bar assist assemblies have required a separate mounting arrangement interconnected with the frame, which adds to the cost and complexity of the frame.

Prior art folding sectional tables have required a user to exert an upward force on the table sections as the table sections are being lowered toward the unfolded, operative position, in order to prevent the table sections from unfolding too quickly after the table sections have attained a predetermined position during downward movement.

As can be appreciated, the table sections are quite heavy, and unrestrained downward movement can cause undesirably fast opening of the table.

In addition, prior art folding sectional tables include a latch arrangement for selectively maintaining the table assembly in its folded, storage position. The latch

arrangement includes a latch member located at the center of one of the table sections, which is engageable with a catch member mounted to the other of the table sections. In order to unfold the table sections, the user has been required to reach into the center of the folded table assembly and to lift or move the latch member out of engagement with the catch member. This is a somewhat complicated motion, in that the user must then withdraw his or her hand from inside the folded table assembly and operate the table assembly for movement toward its unfolded, operative position.

It is an object of the present invention to provide an improved folding sectional table assembly which is extremely easy to operate and which provides controlled movement between its unfolded, operative position and its folded, storage position. It is a further object of the invention to provide such a table assembly which incorporates a cushioning system for providing controlled downward movement of the table assembly from its folded, storage position toward its unfolded, operative position. Yet another object of the invention is to provide such a table assembly which incorporates a unique torsion bar mounting arrangement which does not require a separate structure for interconnecting torsion bars with the table frame. Yet another object of the invention is to provide such a table assembly which combines the advantages of a torsion bar system for aiding in folding of the table assembly, and the advantages of a pneumatic cylinder arrangement for cushioning the table assembly during unfolding and for assisting in moving the table assembly away from its unfolded, operative position and toward its folded, storage position. A still further object of the invention is to provide such a table assembly which utilizes a unique latch arrangement which is easy to operate and which eliminates complicated movements in unlatching the table sections and moving the table sections away from the folded, storage position and toward the unfolded, operative position.

The invention is incorporated into a folding table assembly which includes first and second table sections, each of which includes a table top and a frame including a leg arrangement for supporting the table top above a supporting surface. Each table section further includes one or more hinge members, and the hinge members of the table sections are pivotably interconnected with each other for providing pivoting movement of the table sections between the unfolded, operative position and the folded, storage

position. The leg arrangement of each table section is pivotably interconnected with the table section so as to be movable toward the table section when the table assembly is moved toward its folded, storage position, and movable away from the table top to an extended position when the table assembly is moved toward its unfolded, operative
5 position.

In accordance with one aspect of the invention, a combination torsion bar system and pneumatic cylinder arrangement functions to assist in moving the table assembly from its folded, storage position toward its unfolded, operative position, and to cushion the table assembly during movement toward its unfolded, operative position.
10 One or more torsion bars are interconnected with at least one of the table sections, and torque is imparted to the torsion bars as the table section is moved so as to place the table assembly in its unfolded, operative position. Energy is thus stored in the torsion bars when the table assembly is in its unfolded, operative position, and assists in moving the table assembly toward its folded, storage position when an upward force is exerted
15 on either table section. In a preferred form, the leg arrangement includes at least one upper cross-member which is pivotable relative to the table top, and the torsion bar is mounted within an internal passage defined by the upper cross-member. In addition, at least one extendible and retractable pneumatic cylinder assembly is interconnected between one of the leg arrangements and the hinge arrangement. The pneumatic
20 cylinder assembly is oriented such that movement of the table assembly to its folded, storage position functions to move the cylinder assembly to an extended position, and movement of the table assembly to its unfolded, operative position functions to move the cylinder assembly to a retracted position. The cylinder assembly is operable to control the rate of lowering of the table sections as the table assembly is moved to its
25 unfolded, operative position, to ensure that the table sections are lowered at a relatively slow, controlled speed. In addition, the cylinder assembly includes a spring for urging the cylinder assembly toward its extended position from its retracted position, to assist in raising the table sections when the table assembly is moved from its unfolded, operative position toward its folded, storage position.

30 In accordance with another aspect of the invention, the torsion bar system is preferably interconnected with and extends between a pair of structural apron

members to which the table top is mounted. As noted above, the torsion bar is preferably received within an upper cross-member defined by the leg arrangement of a table section. The upper cross-member of the leg arrangement is pivotably mounted between the structural apron members by means of a pair of pivot hubs, one of which is mounted to each of the structural apron members. In one form, each pivot hub includes a mounting flange member adapted to be secured to the structural apron member, and a sleeve connected to the mounting flange member and extending therefrom toward the opposite structural apron member. One of a pair of ends of the upper cross-member is received within each sleeve, for pivotably mounting the leg arrangement to and between the structural apron members. A torsion bar retainer is mounted to one of the sleeves, and the torsion bar is non-rotatably engaged with the torsion bar retainer. At a location spaced from the torsion bar retainer, the torsion bar is engaged with a torsion bar driver mounted to the upper cross-member, such that pivoting movement of the upper cross-member caused by movement of the leg arrangement functions to impart torque to the torsion bar as the table section is lowered. With this arrangement, the torsion bar assist mechanism is essentially incorporated into the leg arrangement and interconnected with the structural apron members, for providing an efficient torsion bar mounting arrangement and for concealing the torsion bar system.

In accordance with another aspect of the invention, a folding sectional table incorporates a pneumatic cylinder assist and cushioning arrangement. The table sections are interconnected by means of at least one pair of hinge members which are pivotably interconnected with each other via a pivot pin. A foldable leg arrangement is located adjacent at least one of the hinge members, and an extendible and retractable pneumatic cylinder assembly is interconnected between the leg arrangement and the hinge arrangement. In a preferred form, the cylinder assembly is pivotably mounted at a first end to the hinge arrangement and at a second end to the leg arrangement. The first end of the pneumatic cylinder assembly is preferably pivotably mounted at a location coincident with the pivot axis defined by the pivot pin which pivotably interconnects the pivot members. The second end of the pneumatic cylinder assembly is pivotably interconnected with the leg arrangement. In embodiments incorporating more than one pair of hinge members, a pneumatic cylinder assembly is preferably interconnected with

each pair of hinge members. The pneumatic cylinder assemblies are operable to cushion movement of the table assembly as the table assembly is moved toward its unfolded, operative position. The cylinder assemblies are especially beneficial in relatively heavy table assemblies, such as table assemblies with table tops having a relatively long length
5 or in table assemblies incorporating fixed seating structures.

The invention further contemplates a latch arrangement for a folding sectional table assembly. The latch arrangement includes a latch member mounted to one of the table sections and a catch member mounted to the other table section. The latch member is movable between an engaged position in which the latch member
10 engages the catch member to maintain the table assembly in its inoperative, folded position, and a disengaged position in which the latch member is disengaged from the catch member to enable the table assembly to be moved away from its folded, storage position toward its unfolded, operative position. The latch member is preferably pivotably mounted to a cross-member located adjacent the underside of the table top,
15 such as a cross-member associated with a leg arrangement. Movement of the latch member from its engaged position toward its disengaged position is caused by operation of an actuator member, which preferably includes an actuator area located adjacent each of a pair of opposite sides defined by the table top so as to enable operation of the latch arrangement from either side of the table assembly, without reaching between the folded
20 table sections. The actuator member is preferably in the form of a rod pivotably mounted to and between the structural apron members at a location offset from the pivotable mounting of the latch member. The rod includes first and second engagement areas located one adjacent each of the structural apron members, with an intermediate actuating section therebetween which is engageable with the latch member. The
25 intermediate actuating section is received within a slot defined by the latch member and is offset from the actuator areas, such that pivoting movement of the actuator member causes engagement of the actuator section with a wall of the latch member defining the slot, to move the actuator member away from its engaged position. In a preferred form, a spring is interconnected with the latch member for biasing the latch member toward its
30 engaged position, such that the latch member automatically engages the catch member as the table assembly is moved to its folded, storage position.

The various features of the invention can be employed separately to provide advantages in operation over the prior art. In a particularly preferred form, however, the various features are combined so as to provide a table assembly with a number of advantages over the prior art.

5 Various other features, objects and advantages of the invention will be made apparent from the following description taken together with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The drawings illustrate the best mode presently contemplated of carrying out the invention.

10 In the drawings:

Fig. 1 is an isometric view of a folding sectional table constructed according to the invention, showing the table assembly in an unfolded, operative position;

15 Fig. 2 is an isometric view of the frame of the table assembly of Fig. 1 in an unfolded, operative position;

Fig. 3 is a view similar to Fig. 2, showing the frame in a folded, storage position;

Fig. 4 is a bottom plan view of the table assembly of Fig. 1;

Fig. 5 is a side elevation view of the table assembly of Fig. 1;

20 Fig. 6 is a partial section view taken along line 6-6 of Fig. 4;

Fig. 7 is an enlarged partial side elevation view of a hinge arrangement interconnecting the table sections of the folding table assembly of Fig. 1;

Fig. 8 is a side elevation view similar to Fig. 5, showing the table assembly in a folded, storage position;

25 Fig. 9 is an enlarged partial section view of the hinge arrangement of Fig. 7 in combination with a linkage arrangement, showing the table assembly in the folded, storage position;

Fig. 10 is a partial section view taken along line 10-10 of Fig. 7;

30 Fig. 11 is a view similar to Fig. 7, showing operation of a locking bar for selectively retaining the table assembly in the unfolded, operative position;

Fig. 12 is an exploded partial isometric view showing the torsion bar mounting arrangement and the latch arrangement incorporated into the table assembly of Fig. 1;

Fig. 13 is a partial section view taken along line 13-13 of Fig. 12;

5 Fig. 14 is a partial section view taken along line 14-14 of Fig. 13;

Fig. 15 is a partial section view taken along line 15-15 of Fig. 13;

Fig. 16 is a partial side elevation view illustrating the latch member incorporated into the table assembly of Fig. 1;

10 Fig. 17 is a partial isometric view illustrating the latch member of Fig. 16 in combination with a catch member;

Fig. 18 is a partial section view showing operation of the latch member and catch member of Fig. 17 for maintaining the table assembly in the folded, storage position;

15 Figs. 19a-19c are schematic top plan views illustrating different torsion bar configurations for a table assembly such as that of Fig. 1;

Fig. 20 is an isometric view of another embodiment of a frame for a folding sectional table constructed according to the invention, shown in an unfolded, operative position; and

20 Fig. 21 is a view similar to Fig. 20 showing the frame in a folded, storage position.

DETAILED DESCRIPTION OF THE INVENTION

Referring to Figs. 1 and 2, a sectional table assembly 30 constructed according to the invention generally includes a pair of pivotable table sections 32a and 32b, which are essentially mirror images of each other and are pivotably interconnected
 25 with each other in a manner to be explained for movement between a folded, storage position and an unfolded, operative position. Except as described below, table sections 32a and 32b are identical in construction and contain identical components, and like reference characters will be used to describe the components of table sections 32a and 32b, with the modifier "a" and "b" being used to refer to components associated with
 30 table sections 32a and 32b, respectively. Except as expressly set forth hereafter, the description of table section 32a applies equally to table section 32b, and vice versa.

Table section 32a includes a table top 34a and a frame assembly 36a.

Table top 34a is of conventional construction, and is secured to a pair of spaced, parallel structural apron members 38a forming a part of frame assembly 36a. Frame assemblies 36a and 36b are pivotably interconnected with each other for movement between an
5 unfolded, operative position as shown in Fig. 2, and a folded, storage position as shown in Fig. 3.

In addition to apron members 38a, frame assembly 36a includes a pair of structural cross-members 40a extending between the ends of apron members 38a. Cross-members 40a are rigidly mounted to apron members 38a in any satisfactory
10 manner such as by welding, to form a rigid rectangular structure to which the underside of table top 34a is secured.

Frame assembly 36a further includes an inner leg assembly 44a and an outer leg assembly 46a. Inner leg assembly 44a includes an upper horizontal tubular member 48a and a pair of depending leg members 50a, each of which is mounted at its
15 upper end to upper horizontal tubular member 48a. Each leg member 50 includes an outwardly extending horizontal base section 52a which extends outwardly beyond the sides of table top 34a, and an intermediate cross-member 53a which extends between and is interconnected at its ends with leg members 72a. An upstanding seat support member 54a is secured to the outer end of base section 52a, and is interconnected with a
20 seat frame 56a by means of a horizontal connector member 58a. Seat frame 56a includes a lower base member 60a interconnected with end uprights 62a and intermediate uprights 64a. A seat support plate 66a is mounted to the upper end of each of uprights 62a and 64a, and a seat member, such as a bench 68a, is interconnected with seat support plates 66a. Alternatively, it is understood that separate seats may be
25 mounted to each of seat support plates 66a in place of bench 68a, when individual seats are desired.

Outer leg assembly 46a is constructed similarly to inner leg assembly 44a, including an upper horizontal tubular member 70a and a pair of depending leg members 72a. A base section 74a is interconnected with and extends outwardly from the lower
30 end of each depending leg member 72a. A seat support member 76a is mounted to the outer end of each base section 74a, extending upwardly therefrom and interconnected

with seat frame 56a via a connector member 78a. A lower cross-brace member 80a extends between and interconnects base sections 74a, and is connected at each end to seat support member 76a below base section 74a. A caster assembly 82a is interconnected with each seat support member 76a via a caster mounting bracket 84a.

5 An intermediate cross-member 86a extends between and is interconnected at its ends with leg members 72a.

Referring to Figs. 3 and 5-7, a pair of hinge plates 90a are rigidly mounted to the inner one of cross-members 40a of frame assembly 36a. Similarly, a pair of hinge plates 90b are rigidly mounted to the inner one of cross-members 40b of frame assembly

10 36b. Each hinge plate 90a is located adjacent one of hinge plates 90b, with each such set of hinge plates being located adjacent one side of table assembly 30. A hinge pin 94, in the form of a bolt or the like, extends through aligned openings in hinge plates 90a and 90b. Hinge pins 94 define a pivot axis about which frame assembly 36a and 36b are pivotable relative to each other, for providing pivoting movement between the unfolded,

15 operative position of Figs. 1, 2, 4 and 5, and the folded, storage position of Figs. 3 and 8.

Referring to Fig. 7, hinge plate 90a includes an upper edge from which a tab 96a extends upwardly. Similarly, hinge plate 90b defines an upper edge from which a tab 96b extends upwardly. When table assembly 30 is in its unfolded, operative position, tabs 96a and 96b are spaced slightly apart from each other. A locking rod 98 is

20 pivotably interconnected with apron members 38b of table section 32b via end mounting sections 100. When table assembly 30 is in its unfolded, operative position, locking rod 98 is located in the space between tabs 96a and 96b, for preventing inadvertent movement of frame assemblies 36a and 36b away from the unfolded, operative position in the event an inadvertent upward force is applied to either frame assembly. As shown

25 in Fig. 10, each end mounting section 100 includes an inwardly extending mounting shaft section 102 which extends through an opening in one of apron members 38b, for providing pivoting movement of locking rod 98 about a pivot axis defined by mounting shaft sections 102. As shown in Fig. 11, locking rod 98 is movable out of the space between tabs 96a and 96b, for allowing relative movement between hinge plates 90a and

30 90b in order to enable table sections 32a and 32b to be moved away from the unfolded, operative position toward the folded, storage position.

As shown in Fig. 6, upper bars 104a, 104b are rigidly mounted to cross-members 40a, 40b, respectively. Lower bars 106a, 106b are rigidly mounted to intermediate cross-members 53a, 53b, respectively. A link 108a is pivotably mounted at an upper end to upper bar 104a, and is pivotably mounted at a lower end to lower bar 106b. Similarly, a link 108b is pivotably mounted at an upper end to upper bar 104b and at a lower end to lower bar 106a. A tie bar 110a is pivotably mounted at an inner end to lower bar 106a and link 108b, and is pivotably mounted at an outer end to a tab 112a (Fig. 5) secured to intermediate cross-member 86a. Similarly, tie bar 110b is pivotably mounted at an inner end to lower bar 106b and link 108a, and at an outer end to a tab 112b secured to intermediate cross-member 86b.

Referring to Fig. 2, upper horizontal tubular member 48a of inner leg assembly 44a is interconnected with apron members 38a via hub assemblies 114a, 116a. Similarly, hub assemblies 114a and 116a are interposed between upper horizontal tubular member 70a of outer leg assembly 46a and apron members 38a.

As shown in Figs. 13-15, hub assembly 114a includes a mounting flange member 118a and a sleeve 120a secured to mounting flange member 118a. Similarly, hub assembly 116a includes a mounting flange member 122a and a sleeve 124a secured thereto. One end of upper horizontal tubular member 70a is received within sleeve 120a, and the opposite end of upper horizontal tubular member 70a is received within sleeve 124a. Upper horizontal tubular member 70a is pivotable relative to sleeves 120a and 124a, so as to provide pivoting movement of outer leg assembly 46a relative to apron members 38a and table top 34a. Upper horizontal tubular member 48a of inner leg assembly 44a is mounted to hub assemblies 114a and 116a at the inner ends of apron members 38a in the same manner, for providing pivoting movement of inner leg assembly 44a relative to apron members 38a and table top 34a.

Referring to Fig. 13, upper horizontal tubular member 70a defines an internal passage within which a torsion bar 126 is received. A torsion bar retainer 128 is mounted to mounting flange member 118a, extending inwardly therefrom within the passage defined by sleeve 120a. A torsion bar driver 130 is mounted within the internal passage defined by upper horizontal tubular member 70a in the vicinity of sleeve 124a, opposite torsion bar retainer 128. Torsion bar 126 defines a non-circular cross-section,

such as a hexagonal cross-section as illustrated, and torsion bar retainer 128 includes a mating non-circular passage 132 within which one end of torsion bar 126 is received, for non-rotatably mounting torsion bar 126 to hub assembly 114a. Torsion bar driver 130 similarly defines an opening having a non-circular cross-section corresponding to that of torsion bar 126. With this arrangement, pivoting movement of outer leg assembly 46a relative to structural apron members 38a upon movement of table sections 32a, 32b toward the unfolded, operative position functions to twist torsion bar 126 so as to store energy, which assists in raising table sections 32a, 32b when moving table sections 32a, 32b away from the unfolded, operative position toward the folded, storage position.

Each apron member 38a defines a web 136a, an upper flange 138a and a lower flange 140a. Mounting flange 118a of hub assembly 114a defines a pair of threaded passages, and threaded fasteners such as screws 142 extend through openings in apron web 136a and into the threaded passages of mounting flange member 118a for securing hub assembly 114a in position relative to apron member 38a. Similarly, mounting flange member 122a of hub assembly 116a includes a pair of threaded passages, and threaded fasteners such as screws 142 extend through openings in web 136a and into the threaded passages of mounting flange member 122a for securing hub assembly 116a in position relative to apron member 38a. With this arrangement, the presence of a torsion bar assist mechanism is concealed between apron members 38a, for simplifying assembly and for providing a more aesthetically desirable torsion bar mounting arrangement.

Referring to Fig. 6, a pneumatic cylinder assembly 146a is interconnected between one of depending leg members 50a and one set of hinge plates 90a, 90b. Pneumatic cylinder assembly 146a includes a cylinder 148a and a rod 150a. Cylinder 148a is pivotably interconnected with hinge plates 90a, 90b at hinge pin 94, and rod 150a is pivotably mounted to leg member 50a by a tab 152a and a pivot pin 154a. Similarly, cylinder assembly 146b is interconnected in the same manner between one of depending leg members 50b and the other set of hinge plates 90a, 90b. Cylinder assemblies 146a, 146b are pneumatic cushioning cylinder assemblies which are spring biased toward an extended position, such as is available from Suspa of Grand Rapids,

Michigan under Part Nos. 37-3351, 37-3352, 37-3353, 37-3354 and 37-3355, selected according to the size and weight of the components of table assembly 30.

Figs. 16-18 illustrate a latch arrangement for selectively maintaining table assembly 30 in its folded, storage position of Figs. 3 and 8. Generally, the latch arrangement includes a latch member 158 and a catch member 160. Catch member 160 includes a pair of tabs 162 rigidly mounted to upper horizontal tubular member 70a of frame assembly 36a. A catch rod 164 extends between and is mounted at its ends to tabs 162.

Latch member 158 is pivotably mounted at an inner end to a pivot pin 166 which extends between a pair of tabs 168 rigidly fixed to upper horizontal tubular member 70b of frame assembly 36b. Pivot pin 166 extends through a torsion spring 170, which is interconnected between one of tabs 168 and latch member 158 for biasing latch member 158 downwardly, or counterclockwise with reference to Figs. 16-18. Latch member 158 includes an axially extending slot 172, and a hook 174 at its outer end defining a notch 176. A ramped end edge 178 is located outwardly of hook 174.

An actuator member, shown generally at 180, is interconnected between actuator member 158 and apron members 38b for pivoting actuator member 158 upwardly or counterclockwise about pivot pin 166. Actuator member 180 includes a pair of end actuator areas 182, each of which is located outwardly of one of apron members 38b. A mounting section 184 extends inwardly from each end actuator area 182 through an opening formed in each apron member 38b for providing pivoting movement of actuator member 180 relative to apron members 38b. Actuator member 180 further includes a central area 186 including an actuator section 188, which extends parallel to mounting sections 184, and a pair of connector sections 190 which extend between actuator section 188 and mounting sections 184. With this construction, actuator section 188 is laterally offset from the pivot axis of actuator member 180 as defined by the longitudinal axes of mounting sections 184.

Actuator section 188 is disposed within slot 172 of latch member 158. Upon manual engagement of either of end actuator areas 182 and manipulation thereof so as pivot actuator member 180 in a clockwise direction as shown in phantom in Fig. 18, actuator section 188 of actuator member 180 engages the upper wall of slot 172 for

moving latch member 158 in a clockwise direction about pivot pin 166, to a position in which latch member 158 is disengaged from catch rod 164. Releasing end engagement areas 182 of actuator member 180 causes counterclockwise pivoting movement of latch member 158 and actuator member 180 under the influence of torsion spring 170.

5 In operation, table assembly 30 functions as follows. When table assembly is in its folded, storage position, the user manipulates end actuator areas 182 of actuator member 180 to disengage latch member 158 from catch rod 164 as described above. The user then exerts a downward force on either or both of table sections 32a or 10 32b, which causes table sections 32a and 32b to pivot about pivot pins 94 away from the folded, storage position. This movement causes caster assemblies 82a, 82b to move outwardly away from each other, and table sections 32a, 32b are lowered toward the floor or other supporting surface. During such downward movement of table sections 32a, 32b, tie bars 110a, 110b function to bring inner leg assemblies 44a, 44b 15 44b and outer leg assemblies 46a, 46b, respectively. During such downward movement of table sections 32a, 32b, torsion is applied to torsion bars 126 by torsion bar drivers 130, to store energy in torsion bars 126 tending to resist such downward movement. However, the weight of the components of table sections 32a, 32b overcomes any such resistance, such that table sections 32a, 32b continue to be lowered toward the floor.

20 As table sections 32a, 32b approach the fully lowered position of Fig. 2, pneumatic cylinder assemblies 146a, 146b function to cushion such downward movement of table sections 32a, 32b by the cushioning properties of cylinder assemblies 146a, 146b, in order to prevent the rapid downward movement of table sections 32a, 32b which may otherwise occur. Cylinder assemblies 146a, 146b function to gradually 25 lower table sections 32a, 32b by gravity or with the assistance of an operator, although the cushioning properties of cylinder assemblies 146a, 146b prevent movement beyond a predetermined rate. As table sections 32a, 32b are moved together, locking rod 98 is received between tabs 96 for maintaining table sections 32a, 32b in the unfolded, operative position of Fig. 2.

30 When it is desired to raise table assembly 30 for folding and storage purposes, the user manipulates end mounting sections 100 of locking rod 98 to move

locking rod 98 upwardly from between tabs 96, as shown in phantom in Fig. 11. The user then applies an upward force on either or both of table sections 32a, 32b, causing pivoting movement about hinge pins 94. Hydraulic cylinder assemblies 146a, 146b, which are spring biased toward an extended position, assist in such movement, as do
5 torsion bars 126. With this arrangement, the dual assist provided by hydraulic cylinder assemblies 146a, 146b and torsion bars 126, makes it relatively easy to lift table sections 32a, 32b, to significantly ease the burden on a user in moving table sections 32a, 32b to the folded, storage position.

As table sections 32a, 32b approach the folded, storage position, angled
10 end edge 178 of latch member 158 approaches catch rod 164 of catch member 160. Continued movement of table sections 32a, 32b together results in engagement of angled end edge 178 with catch rod 164, such that latch member 158 is pivoted in a clockwise direction until catch rod 164 clears hook 174 of latch member 158. When this occurs, latch member 158 is moved in a counterclockwise direction under the influence
15 of torsion spring 170, to engage catch rod 164 within notch 176. With this arrangement, engagement of latch member 158 with catch member 160 functions to retain table sections 32a, 32b together in the folded, storage position.

When it is desired to subsequently move table sections 32a, 32b to the unfolded, operative position, the user manipulates end actuator areas 182 of actuator
20 member 180, from either side of table assembly 30, so as to rotate latch member 158 clockwise and to disengage catch rod 164 from notch 176. Once table sections 32a, 32b are moved slightly apart, the user releases engagement with the end actuator area 182 and moves table sections 32a, 32b downwardly as described above.

Referring to Figs. 19a-19c, it can be appreciated that any number of
25 torsion bars 126 may be incorporated into a table assembly. Referring to Fig. 19a, a table assembly 30' incorporates two torsion bars 126 and associated hub mounting arrangements, with each torsion bar 126 being associated with an outer leg assembly. Fig. 19a illustrates two torsion bars 126, Fig. 19b illustrates three torsion bars 126, and Fig. 19c illustrates four torsion bars 126. Figs. 19a-19c illustrate table sections 32a, 32b
30 schematically, and it is understood that more torsion bars 126 are used for larger table

sections 32a, 32b or table sections with fixed seating, and fewer torsion bars 126 are used with smaller table sections 32a, 32b or table sections without fixed seating.

When an upper horizontal tubular member, such as 48, 70, does not include a torsion bar 126, the upper horizontal tubular member is pivotably mounted
5 between the apron sections, such as 38a, in the same manner as shown and described above, i.e. utilizing hub assemblies such as 114, 116. Torsion bar 126 is omitted, as are torsion bar retainer 128 and torsion bar driver 130. In all other respects, however, the pivotable mounting of the leg arrangement is the same as shown and described previously.

10 Figs. 20 and 21 illustrate a folding sectional table assembly 194 which includes a pair of table sections 196a, 196b pivotably interconnected together for movement between an unfolded, operative position of Fig. 20 and a folded, storage position of Fig. 21. Table sections 196a and 196b are generally similar in construction to table sections 32a, 32b, respectively, and like reference characters will be used where
15 possible to facilitate clarity. Table sections 196a, 196b differ from table sections 32a, 32b, respectively, in that table sections 196a, 196b have a somewhat different leg structure and do not include a seat frame such as 56 and associating seating components.

Table section 196a includes an outer leg assembly 198a which includes a central leg member 200a and a lower base member 202a. A caster assembly 84a is
20 mounted to each of a pair of caster mounting arms 204a, each of which is secured to an end of lower base member 202a. The upper end of central leg member 200a is rigidly fixed to upper horizontal tubular member 70a, and is pivotable therewith relative to apron members 38a.

An inner leg member 206a is mounted to upper horizontal tubular member
25 48a, and a foot 208a is mounted to the lower end of leg member 206a. Leg members 200a, 206a are interconnected together via tie bar 110a, and a linkage arrangement similar to that illustrated in Fig. 6 is interconnected between the frame assembly of each table section and the inner leg member 206 and tie bar 110 of the opposite table section.

Because table assembly 194 does not include any seating components, the
30 overall weight of table assembly 194 is significantly less than that of a table assembly such as 30. Due to this lesser weight, table assembly 194 does not incorporate

pneumatic cylinder assemblies such as 146, since the lesser weight of the table sections 196a, 196b has been found to be more easily managed by a user in lowering table sections 196a, 196b in lowering and raising table sections 196a, 196b. In all other respects, however, construction and operation of table assembly 194 is the same as
5 described previously with respect to table assembly 30.

It can thus be appreciated that the folding sectional table assembly of the present invention incorporates a number of features which enhance operation and assembly. The combination of pneumatic cylinders and torsion bars greatly enhances operation of heavy table assemblies such as those which include seats, both in
10 cushioning downward movement of the table sections to the unfolded, operative position and in raising of the table sections for movement toward the folded, storage position. The torsion bar mounting arrangement is combined with the pivotable leg mounting, so as to conceal the torsion bar arrangement and to simplify assembly. In addition, the same basic leg mounting arrangement is used for all leg assemblies, and torsion bars can
15 be selectively employed in desired ones of the leg assemblies according to the overall weight of the table sections. The pneumatic cylinder assemblies act directly at the hinge point between the table sections, providing efficient and effective cushioning and assist during lowering and raising of the table sections. The latch arrangement provides a convenient and reliable mechanism for automatic engagement as the table sections are
20 moved toward the folded, storage position, and can be accessed from either side of the table for disengaging the latch member when it is desired to lower the table sections.

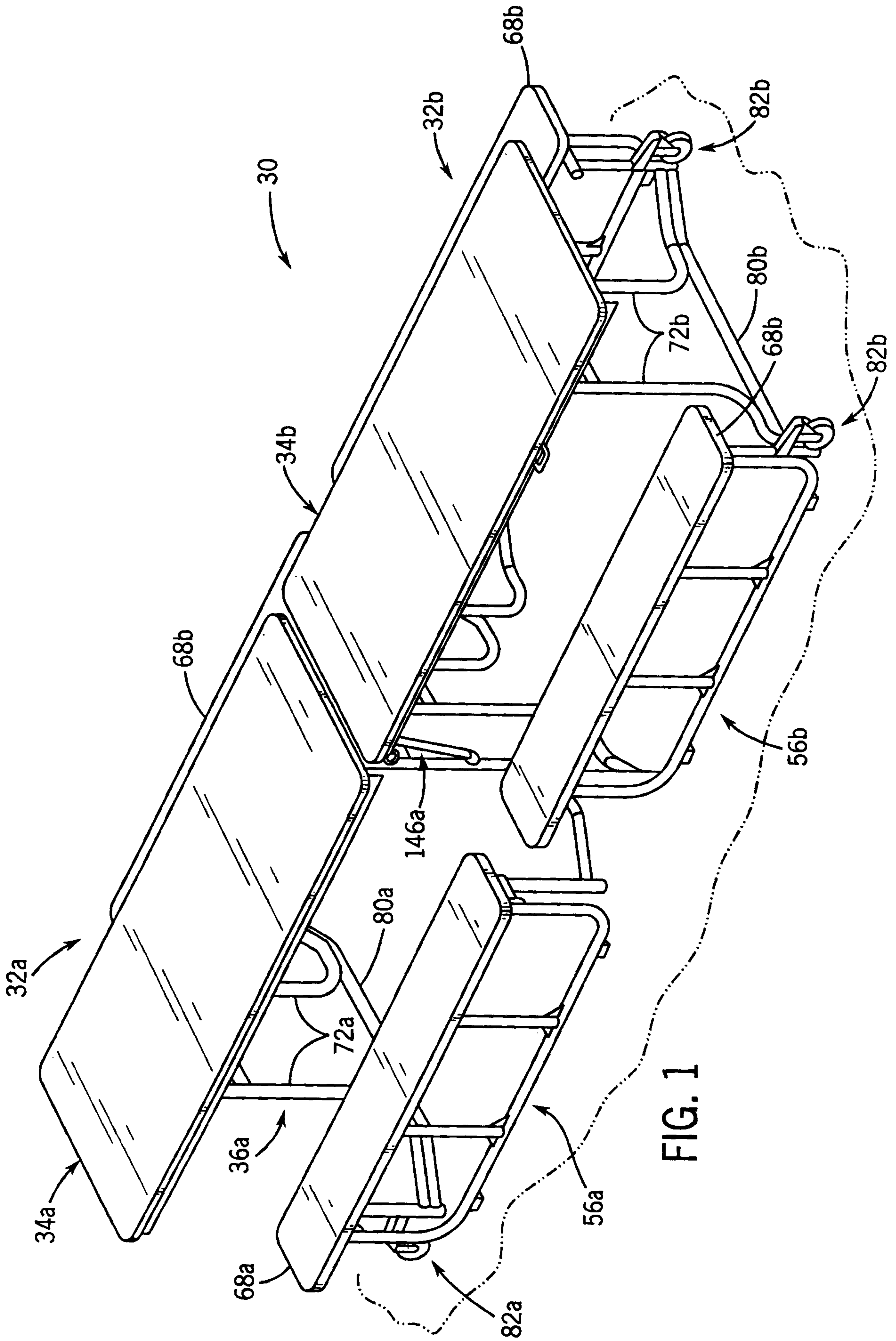
Various alternatives and embodiments are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter regarded as the invention.

CLAIMS:

1. A folding table assembly including first and second table sections, each of which defines an inner end and an outer end, wherein the table sections are pivotably interconnected at their inner ends via a pivot arrangement for movement of the table assembly between a folded, storage position and an unfolded, operative position, wherein each table section includes a table top defining a pair of spaced sides, and a frame for supporting the table top above a supporting surface, said folding table assembly further comprising:

a catch member mounted to one of the table sections, wherein the catch member is separate from the pivot arrangement and is mounted to said one of the table sections at a location outwardly of the pivot arrangement; and

a latch member mounted to the other of the table sections, wherein the latch member is separate from the pivot arrangement and is mounted to said other of the table sections at a location outwardly of the pivot arrangement, wherein the latch member is movable between an engaged position in which the latch member engages the catch member for maintaining the table assembly in its folded, storage position, and a disengaged position in which the latch member is disengaged from the catch member for allowing the table assembly to be moved from its folded, storage position toward its unfolded, operative position, wherein the latch member is movable between its engaged and disengaged positions by operation of an actuator member including first and second actuator areas, each of which is located adjacent one of the sides of the table top for enabling a user to move the latch member from its engaged position toward its disengaged position from either side of the table top.



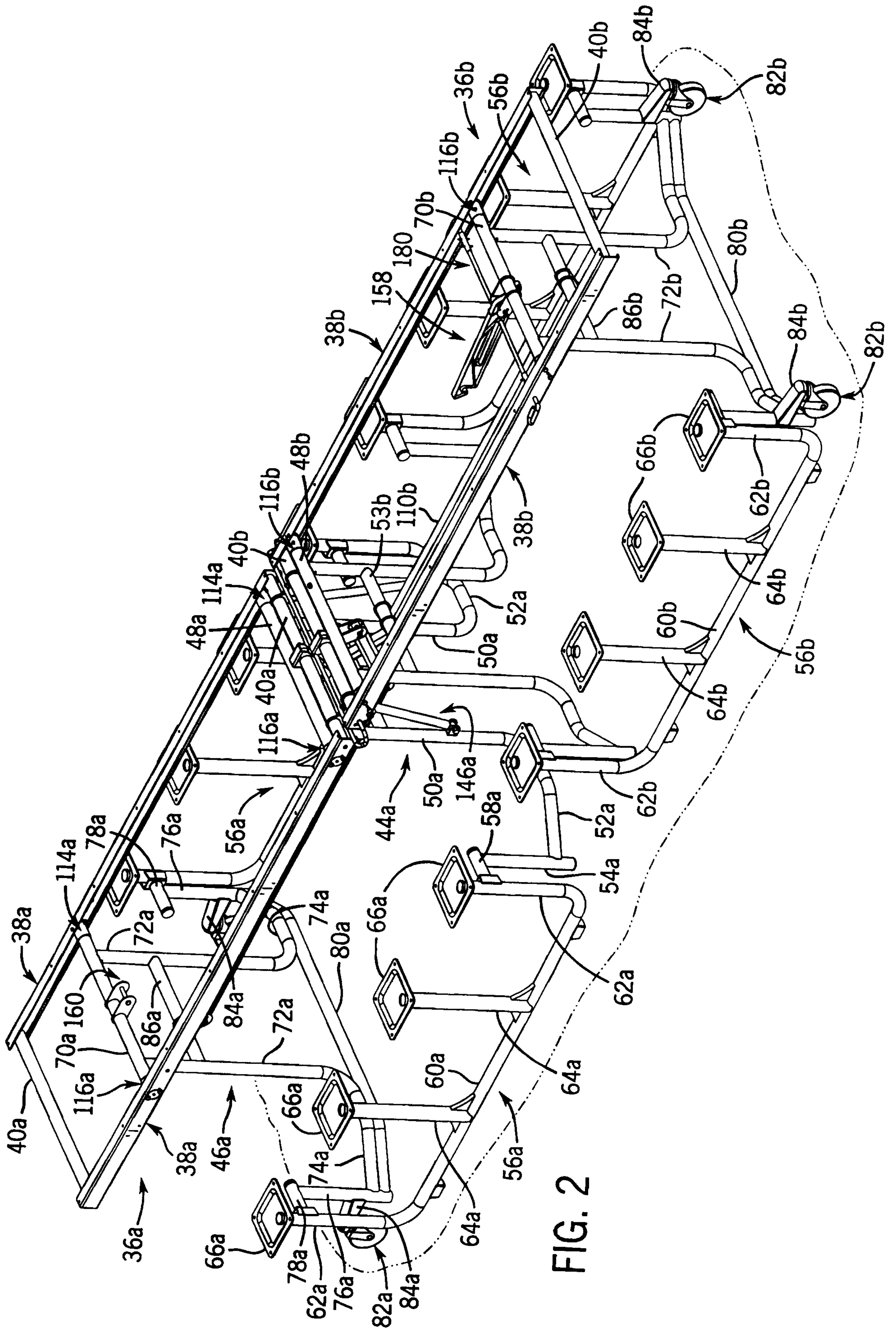
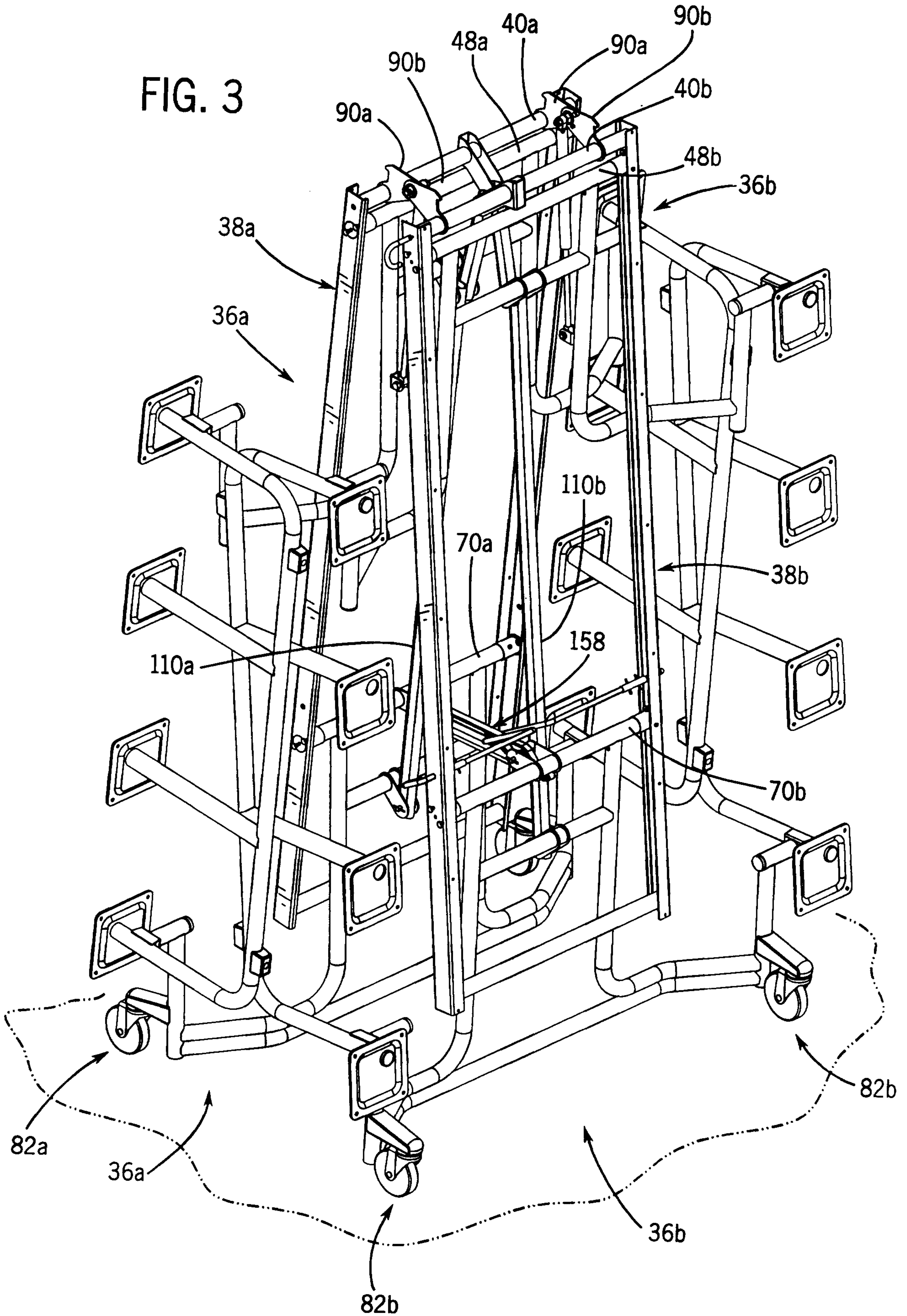


FIG. 2

FIG. 3



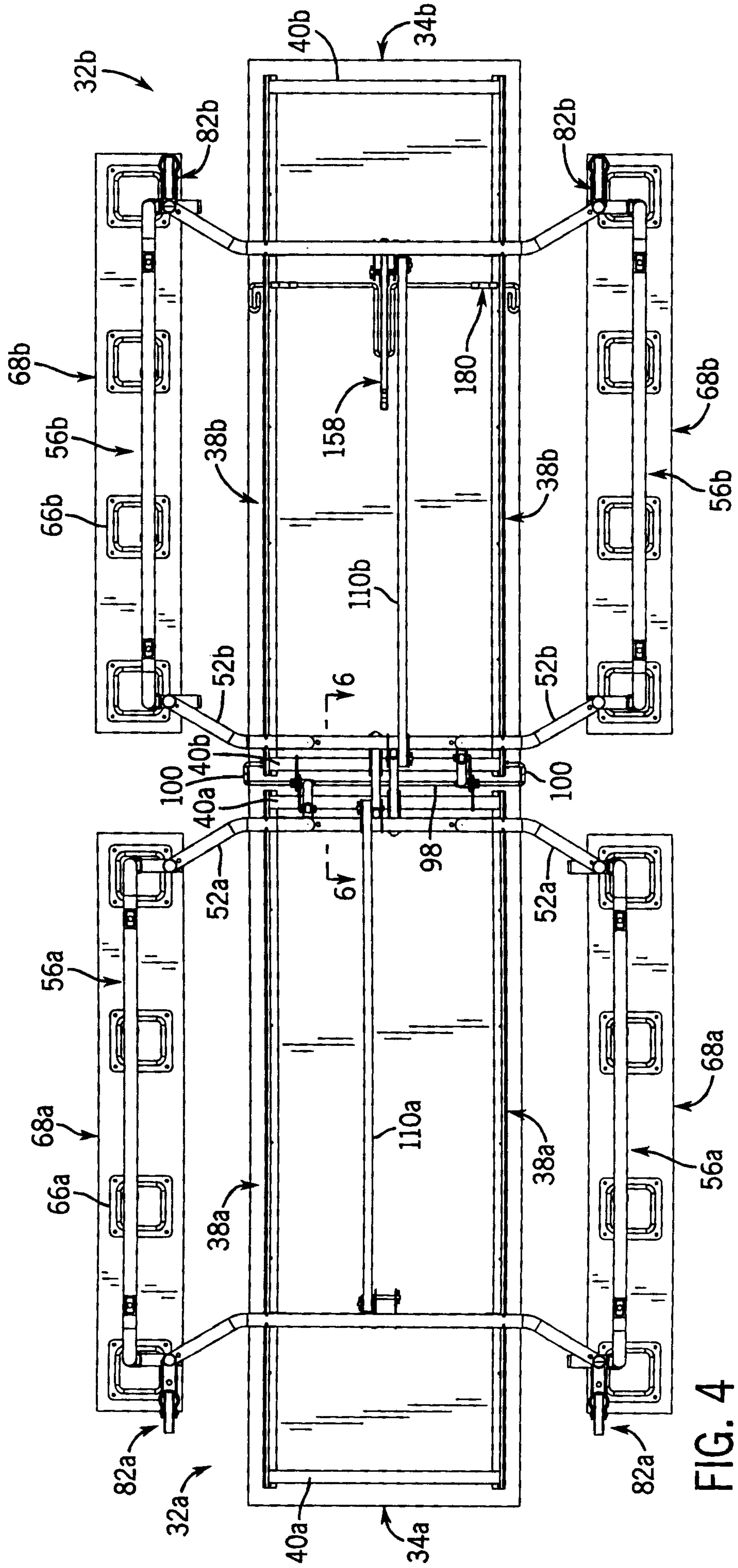


FIG. 4

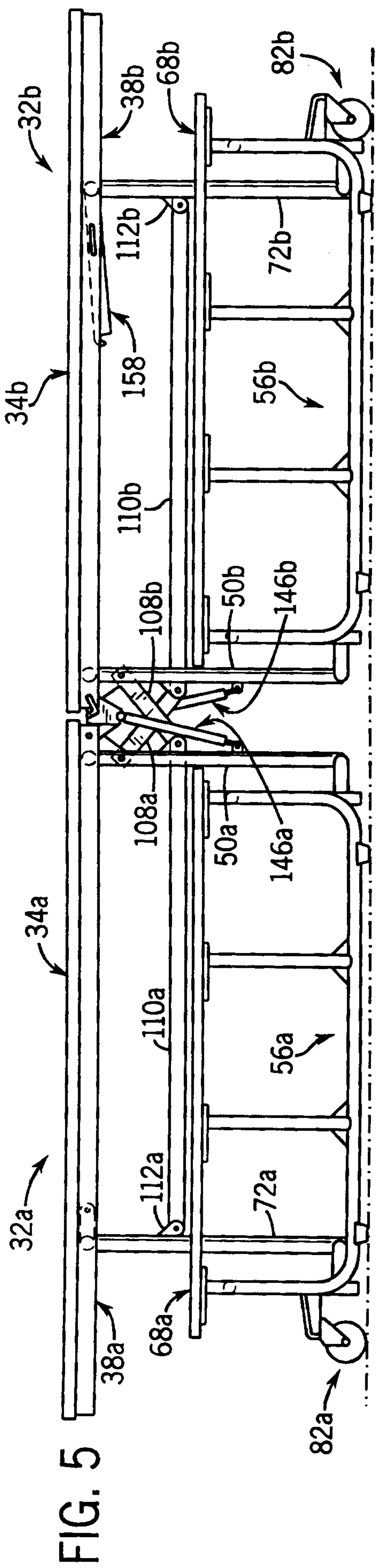


FIG. 5

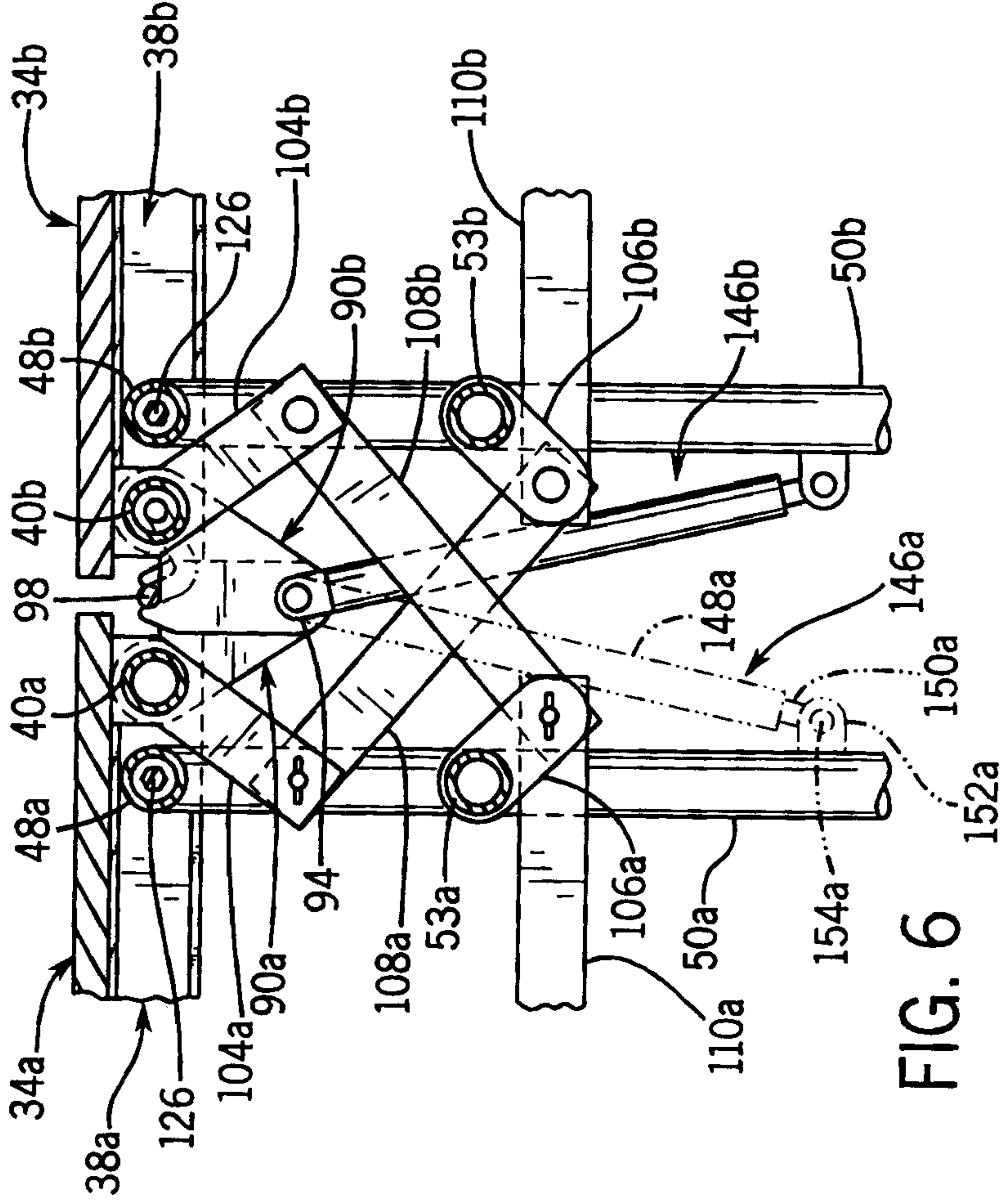


FIG. 6

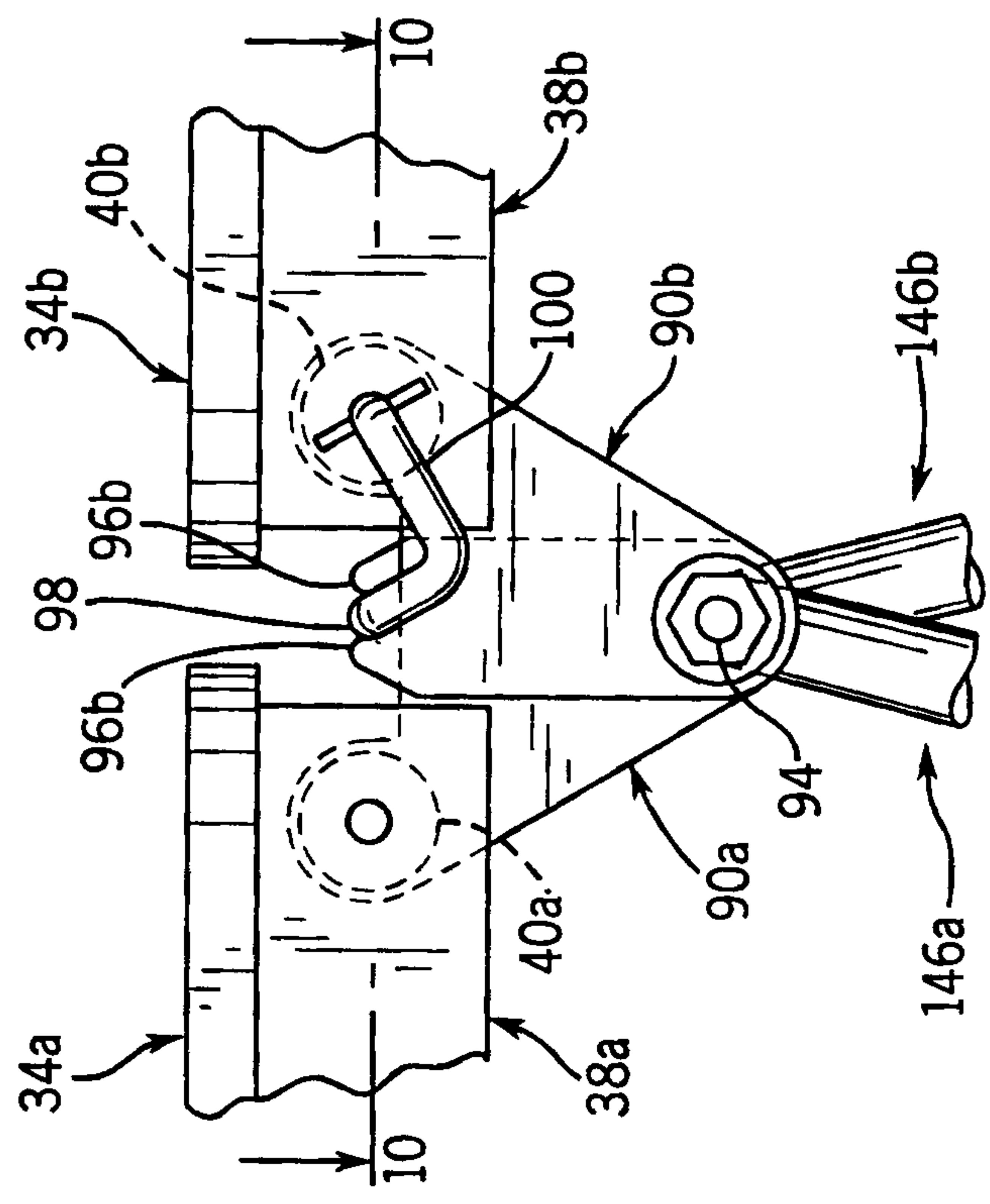
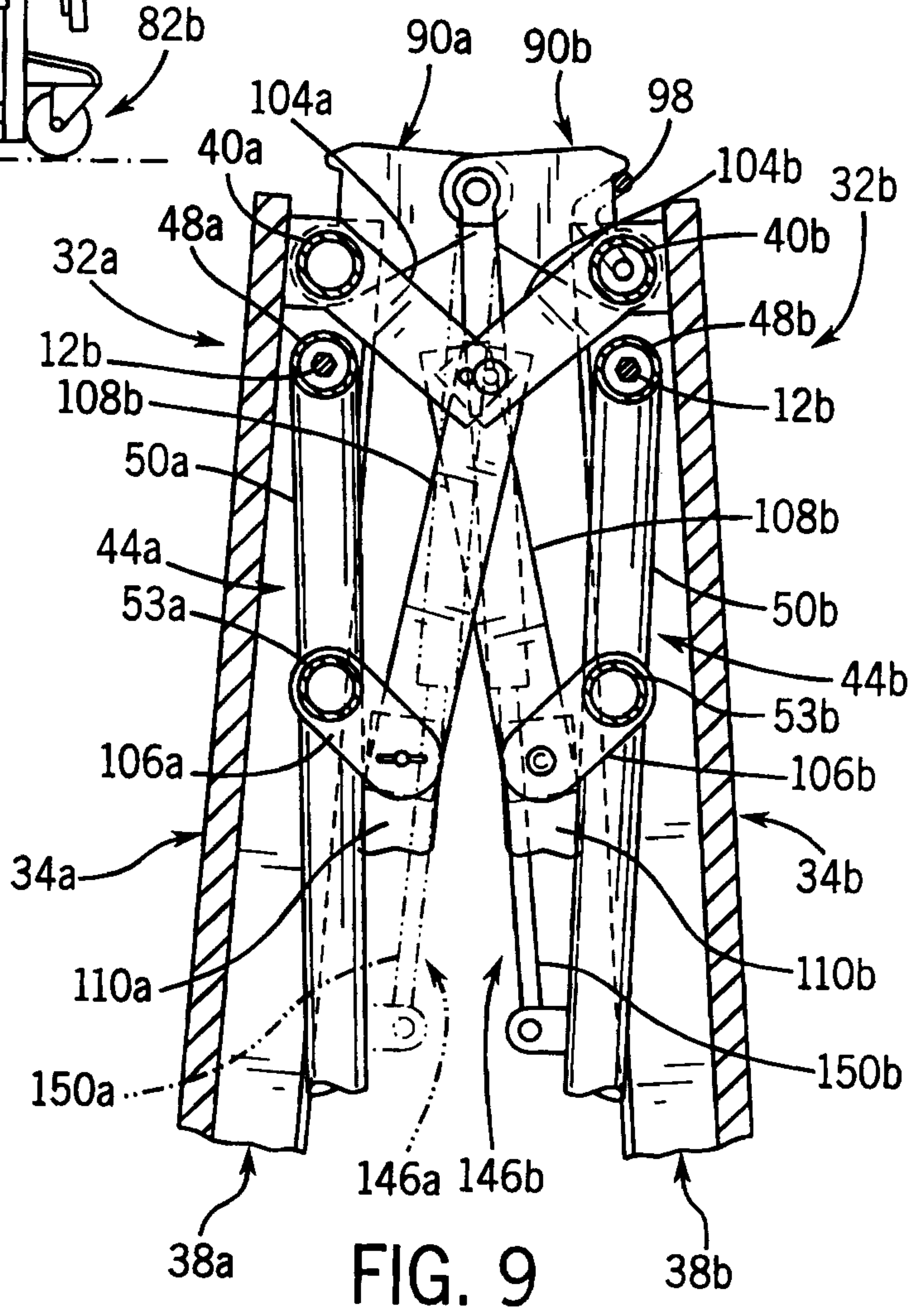
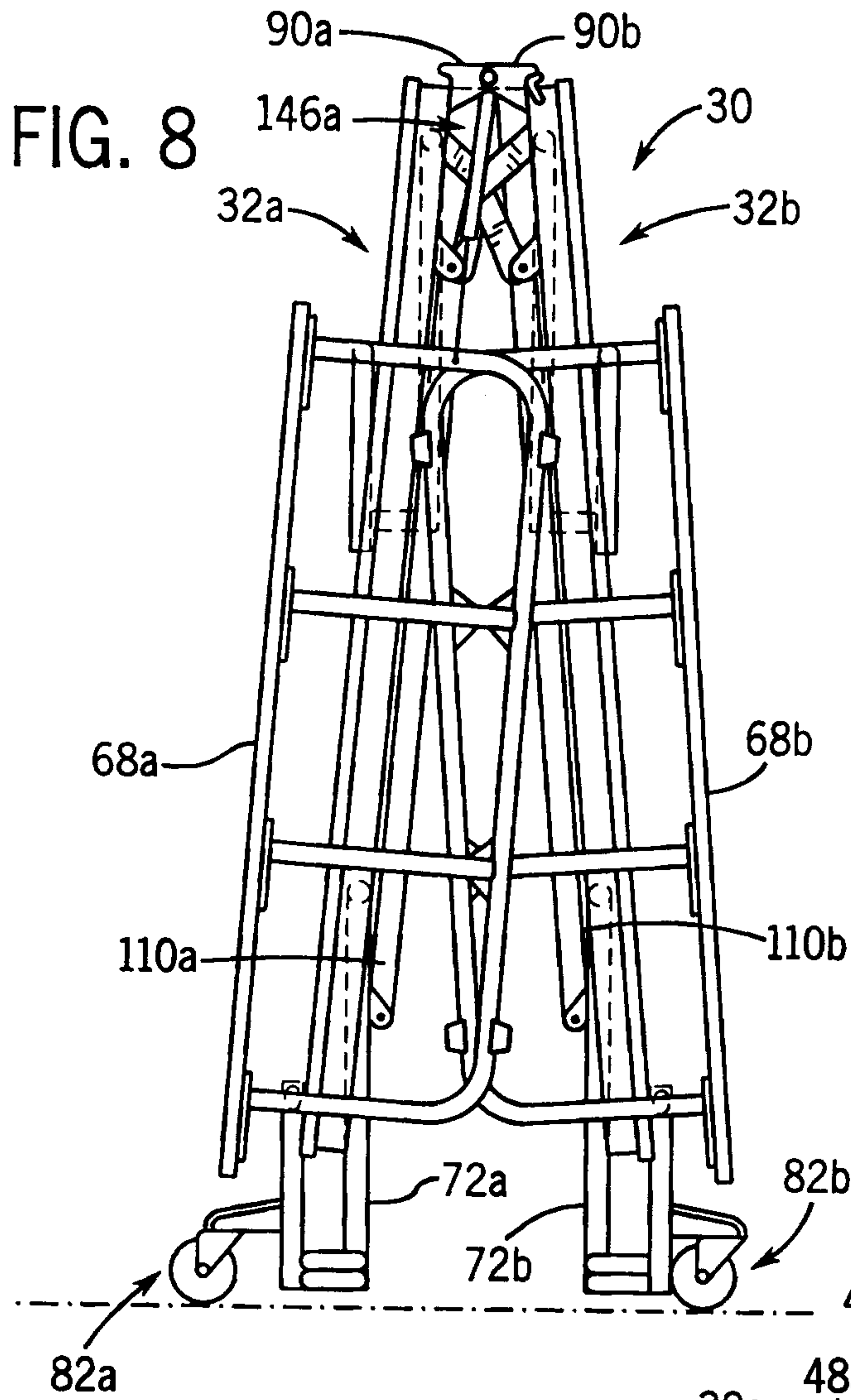


FIG. 7



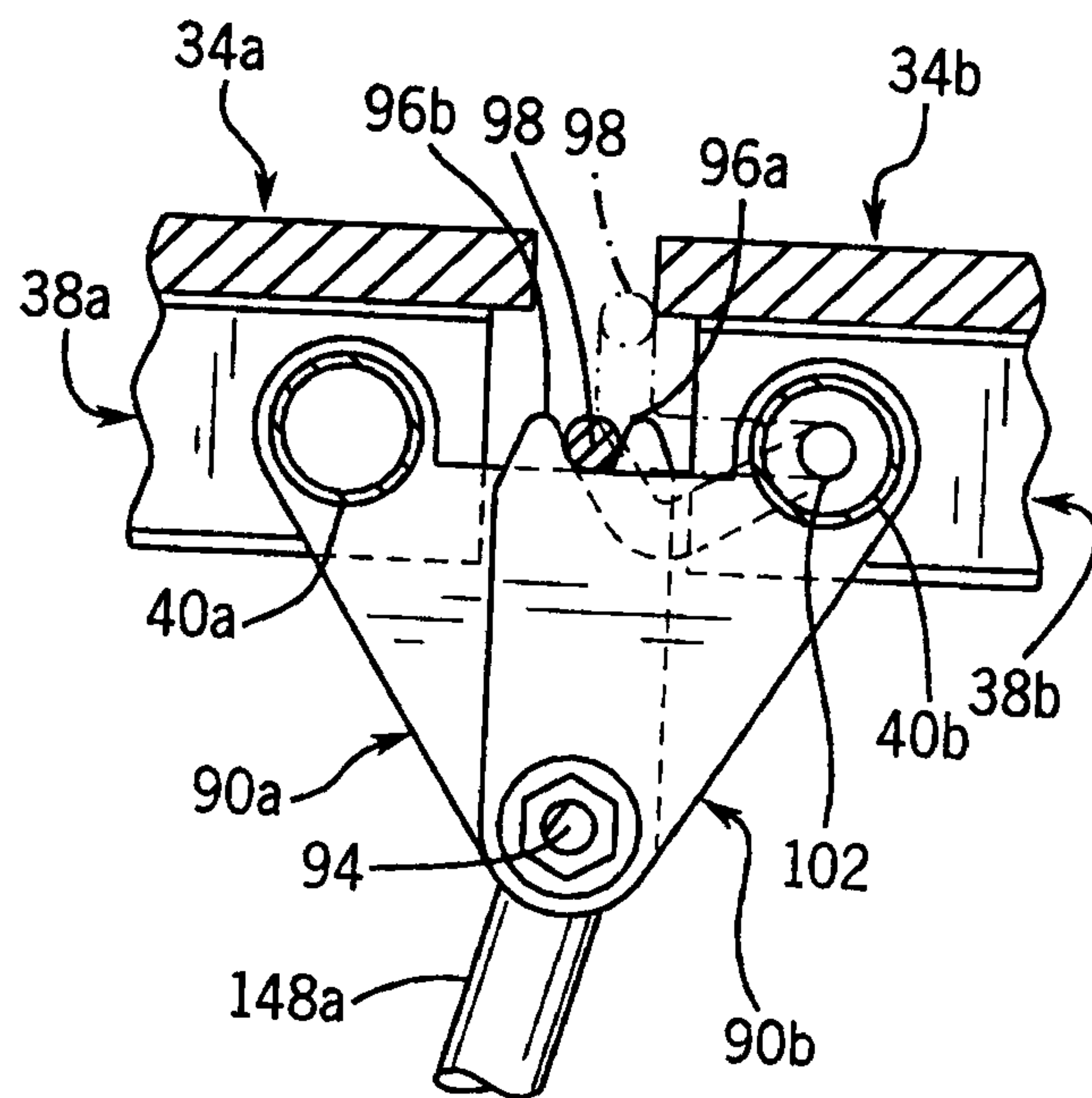
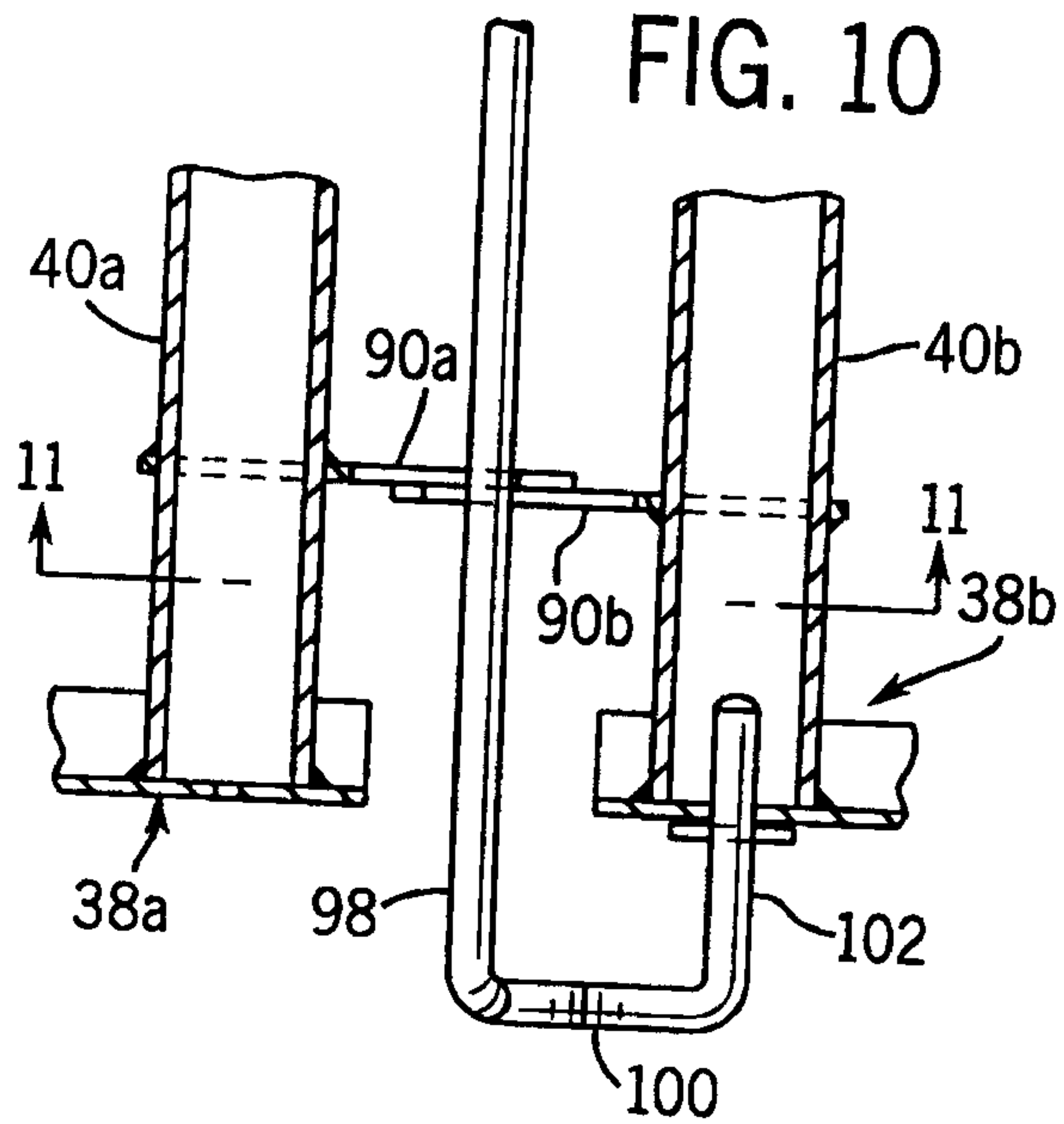


FIG. 11

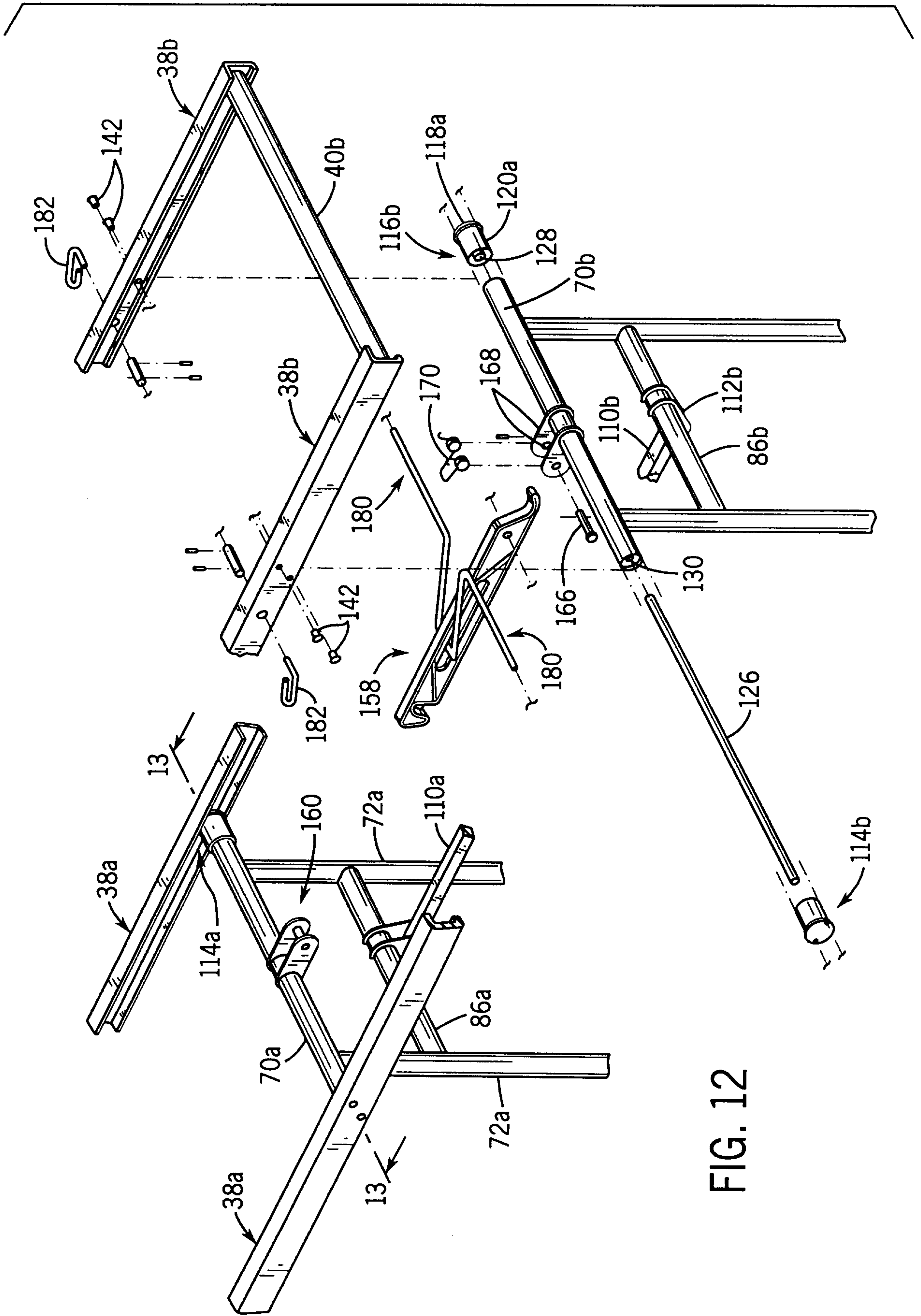


FIG. 12

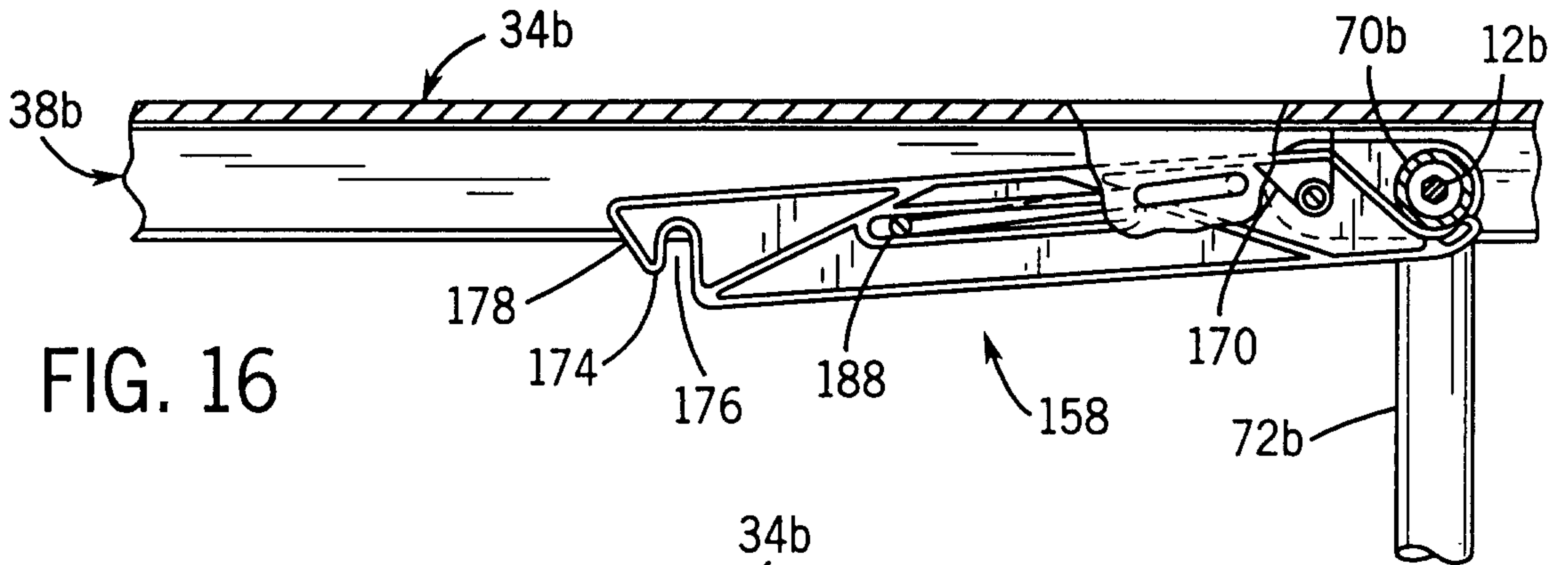


FIG. 16

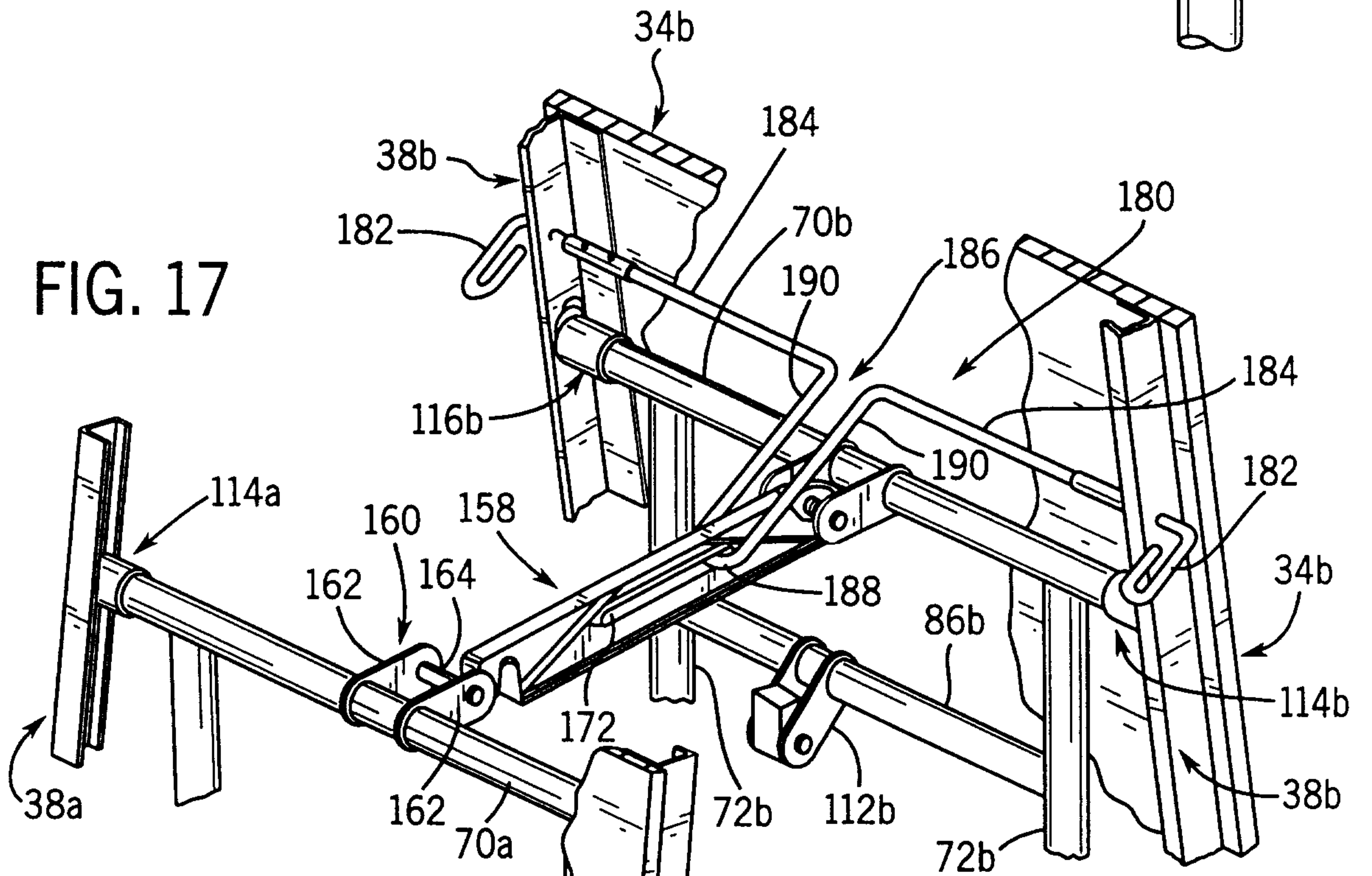


FIG. 17

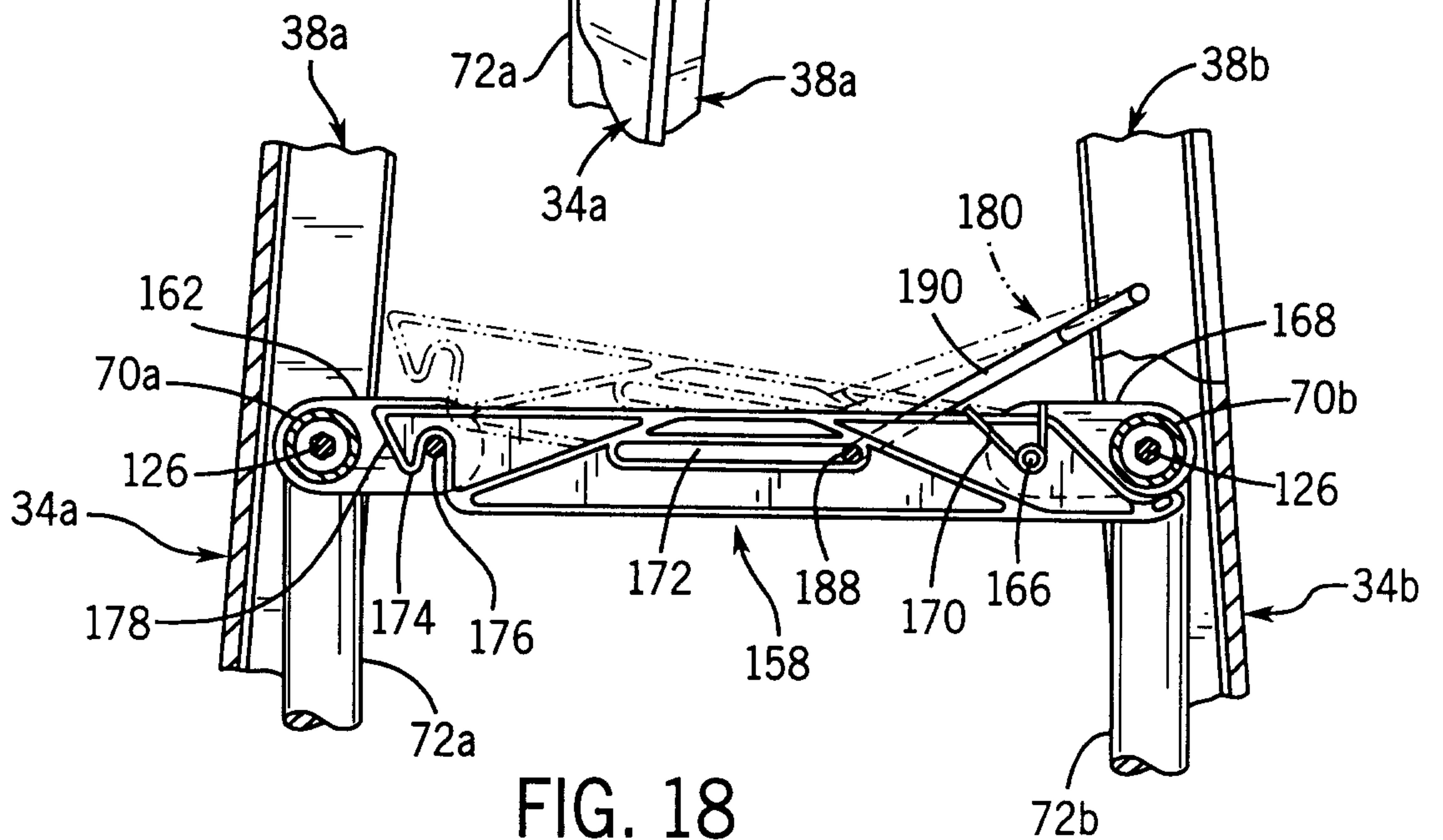


FIG. 18

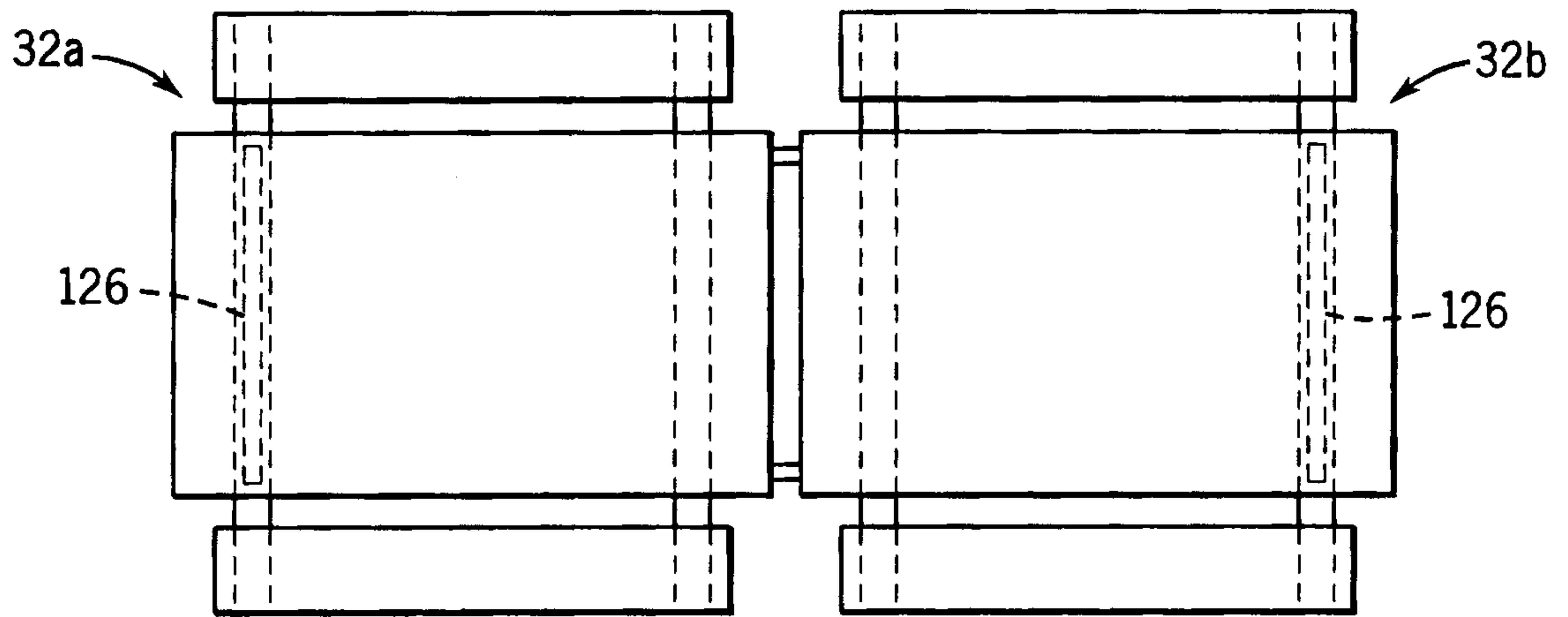


FIG. 19A

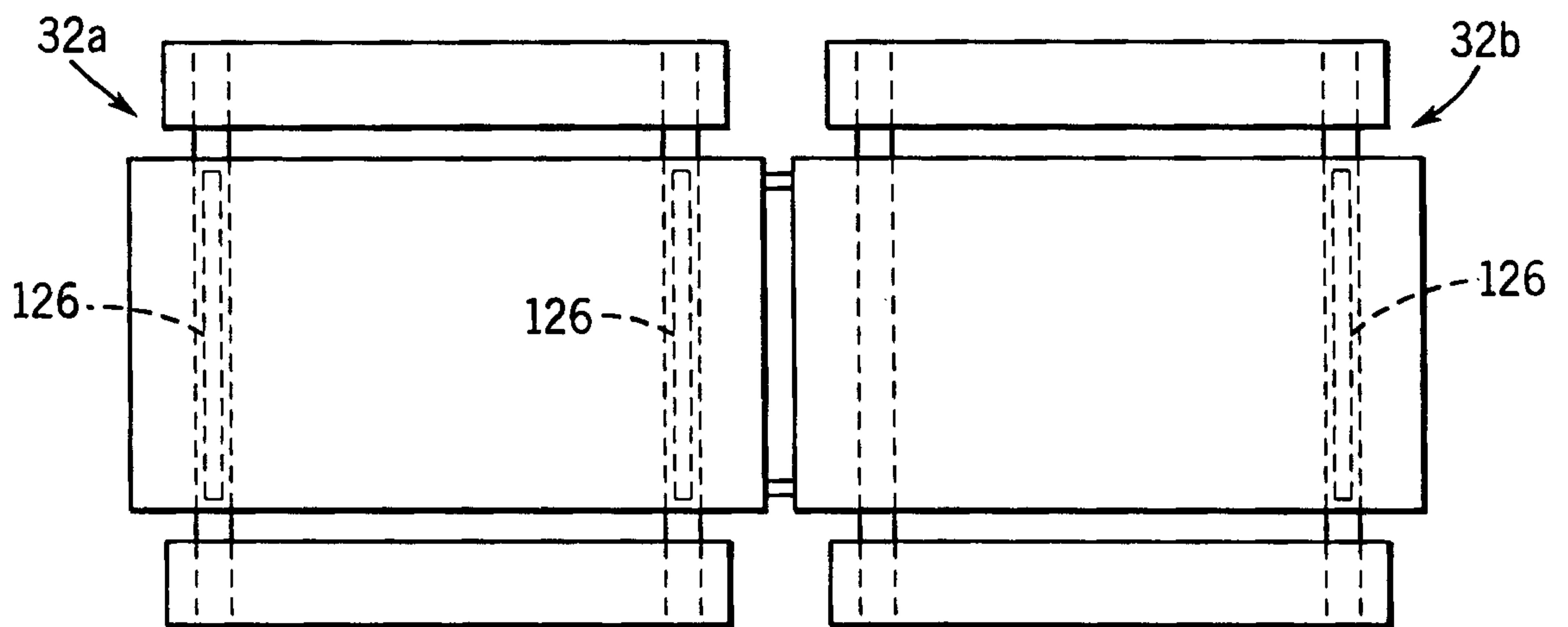


FIG. 19B

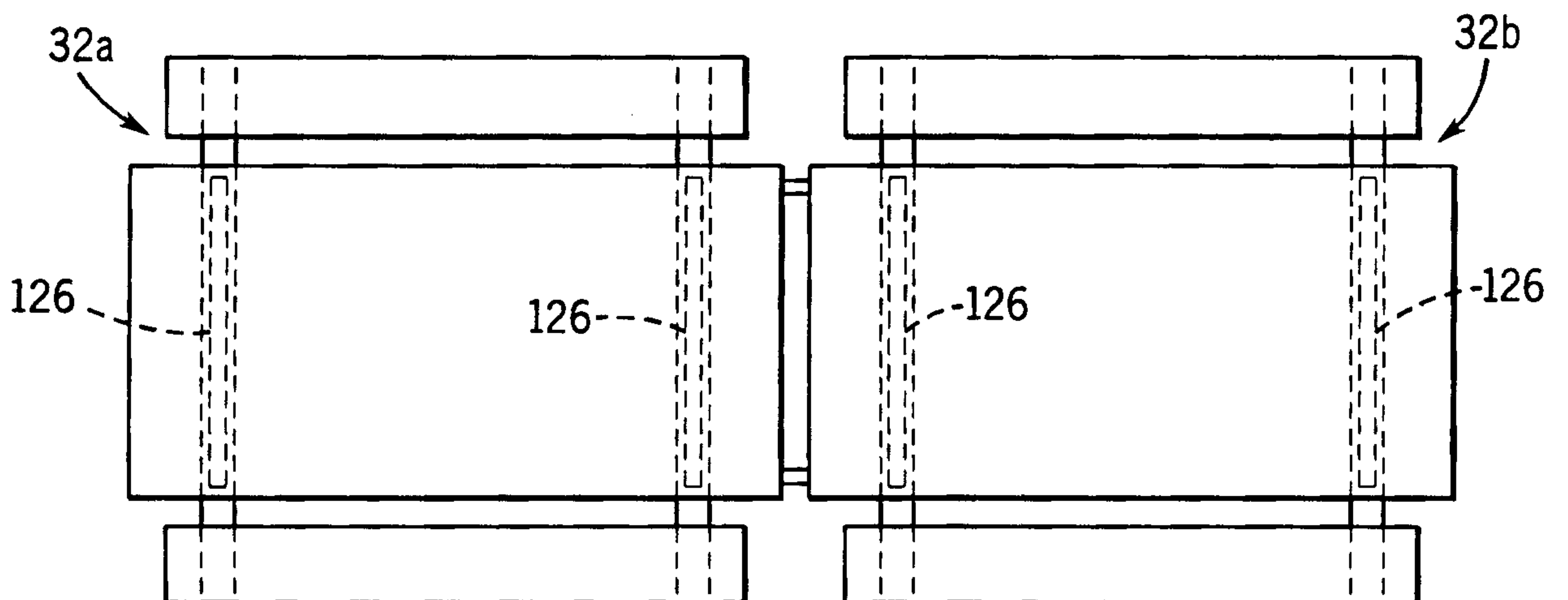


FIG. 19C

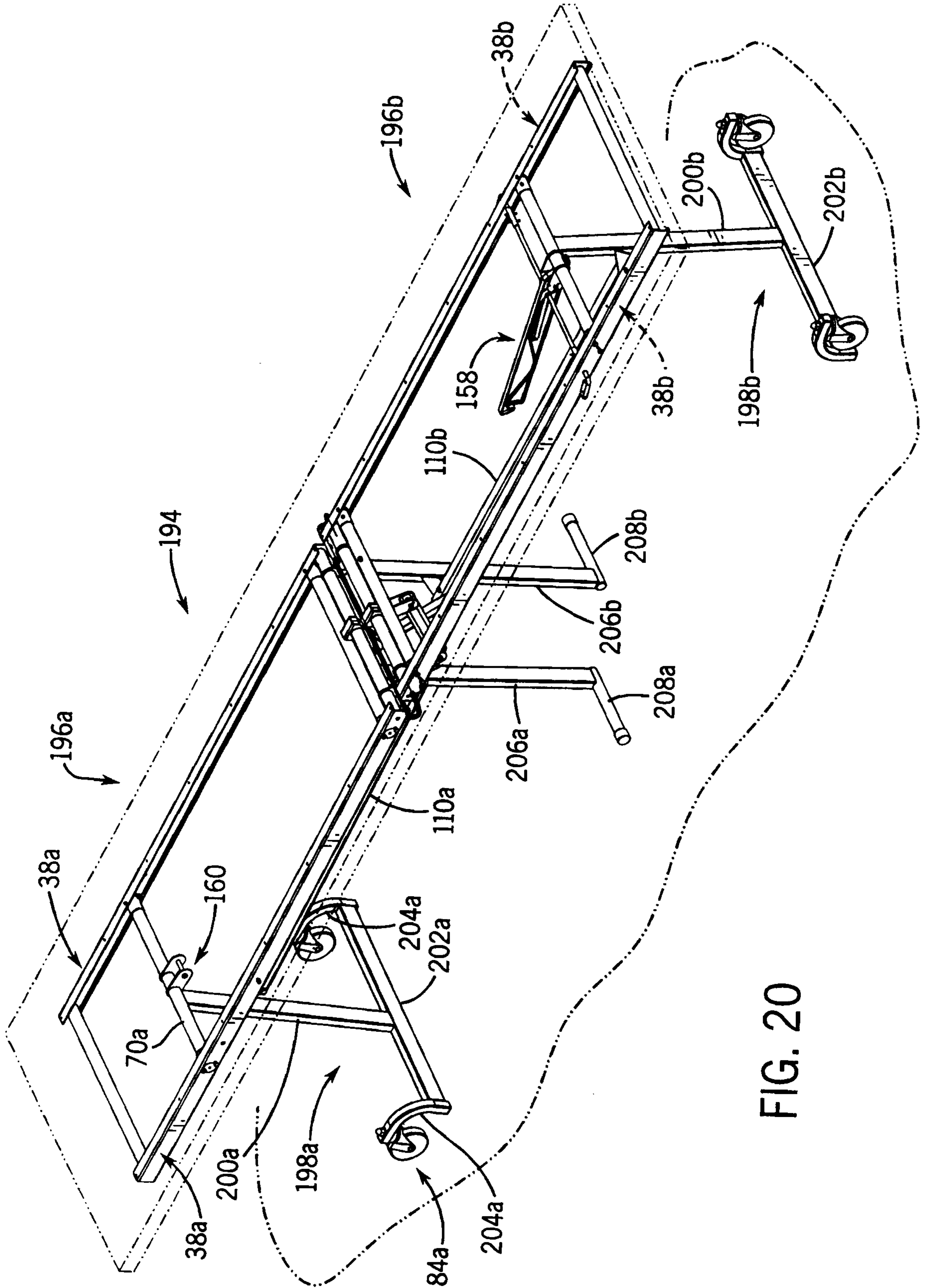


FIG. 20

FIG. 21

