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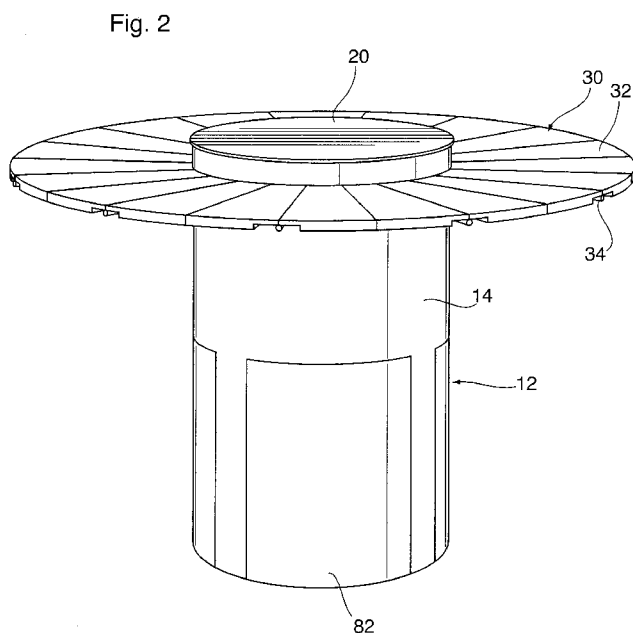
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(54) **Title:** FOLDABLE TABLE



(57) **Abstract:** The present invention provides for a foldable table assembly movable between an open and a closed position. The foldable table assembly comprises a base including a base wall surrounding a hollow interior for containing a folding table, the folding table being movable between a closed folded and an open unfolded position and a screw Jack assembly moving the folding table between the folded position inside the hollow interior of the base and unfolded substantially horizontal position removed from the hollow interior wherein operation of the Jack assembly permits the folding and unfolding of the table. The foldable table assembly has a lifting plate engaged with the Jack having a plurality of lifting arms each arm having a first end attached to the lifting plate and a pair of table top segments hingedly connected between a pair of said lifting arms. The pair of table top segments are connected one to another by means of a flexible hinge to allow the pivot point between the pair of table top segments to be located at the surface of the table top segments. In this way the table top surface in the open unfolded position has a smooth finish with no projections rising above the surface.

TITLE:FOLDABLE TABLE**FIELD OF THE INVENTION**

[0001] The present invention is directed to a foldable table and in particular to a jack operated foldable table having a segmented solid table top.

BACKGROUND OF THE INVENTION

[0002] Foldable furniture, particularly tables and chairs are well known in the art. Foldable furniture, particularly foldable tables offer many benefits, especially for apartment dwellers. In the current real estate market with more and more people living in condominiums with small apartments, modular foldable furniture becomes desirable. Foldable tables occupy little space during storage and can accommodate several people in the unfolded operating state. In addition foldable tables in the folded state may also be used as a side table, increasing the usability.

[0003] There are number of collapsible tables and collapsible dining sets described in prior art. U.S. Pat. No. 6,065,802 discloses a folding table and a seating apparatus comprising a circular table and eight stools. This assembly, even in a folded state, occupies a large space and does not provide a sufficient solution to space limitations in condominiums.

[0004] There are several "umbrella type" foldable tables as disclosed in U.S. Pat. Nos. 786,732; 2,162,298 and 5,425,315. These tables which occupy a small space are disadvantageous in that, when collapsed, the upper table surface folds outward and remains open to air subjected to dust and dirt. This is undesirable due to sanitary concerns.

[0005] Further U.S. Pat. No. 4,144,823 discloses a collapsible table and a seat assembly in which the table top is stored inside the interior of the housing. The described design has a limitation in the size of the table which can be nested inside the interior. Further there some operational limitations: the folding and the unfolding of the table are complicated and physically challenging. Finally this type of assembly is adapted to be used mostly outdoors and is not suitable for the indoor use.

[0006] There were numerous attempts to develop foldable tables with a seat assembly, however most of those tables had various deficiencies. Some expose the table tops to the environment making it a sanitary concern. Others have a complicated mechanical structure while others occupied a lot of storage space.

[0007] Another deficiency of the foldable tables described in the prior art was the folding and unfolding operation. All the tables had to be manually operated and therefore the procedure of folding and unfolding required physical strain and limited the manufacturing of tables to a smaller size.

[0008] It is therefore a primary object of the invention to provide a foldable table operable by a jack to make the folding and unfolding of the table effortless.

[0009] It is yet another object of the invention to provide a foldable table which does not expose its working surface to the environment during the storage in the folded state.

[0010] It is another object of the invention to provide a foldable table with a lid which serves as a lid in the folded state and as a serving surface in the operational state.

[0011] It is yet a further object of the invention to provide a foldable table with a foldable seat assembly operable by a jack.

[0012] Thus the present invention relates to a foldable table which overcomes the deficiencies of the prior art. The present invention is directed to an improved foldable table which is easy to store and easy to operate, the table is not limited in size and does not expose the table top to the environment during storage.

[0013] Further and other objects of the invention will become apparent to those skilled in the art when considering the following summary of the invention and the more detailed description of the preferred embodiments illustrated herein.

SUMMARY OF THE INVENTION

[0014] The present invention provides for a foldable table assembly movable between an open and a closed position. The foldable table assembly comprises a base including a base wall surrounding a hollow interior for containing a folding table, the folding table being movable between a closed folded and an open unfolded position and a screw Jack assembly moving the folding table between the folded position inside the hollow interior of the base and unfolded substantially horizontal position removed from the hollow interior wherein operation of the Jack assembly permits the folding and unfolding of the table. The foldable table assembly has a lifting plate engaged with the Jack having a plurality of lifting arms, each arm having a first end attached to the lifting plate and a pair of table top segments hingedly connected between a pair of said lifting arms. The pairs of table top segments are connected one to another by means of a flexible hinge to allow the pivot point between the pair of table top segments to be located at the surface of the table top segments. In this way the table top surface in the open unfolded position has a smooth finish with no projections rising above the surface.

[0015] In an aspect of the invention, the screw jack assembly comprises a motor connected to a gear drive which operates a screw rod, one end of the screw rod being contained within the gear drive unit such that the operation of the motor and attached gear drive unit causes the screw rod to rotate to raise and lower the lifting plate and allow the table top assembly to be moved between the closed and open positions.

[0016] In another aspect of the invention, the lifting plate is connected to the screw rod by means of a threaded adaptor which contains threads on the interior thereof which are complementary to the threads of the screw rod.

[0017] In yet another aspect of the invention, the lifting plate has a central opening to contain the threaded adaptor which is attached to the lifting plate by rods extending between the

exterior surface of the threaded adaptor and the interior surface of the central opening of the lifting plate.

[0018] In a further aspect of the invention, the foldable table assembly is provided with a lid which covers the top of the table top assembly in the closed position and acts as a serving platform when the foldable table assembly is in the open position.

[0019] In yet another aspect of the invention, the lid is provided with a Lazy Susan type assembly to improve the serving capability of the lid when the foldable table assembly is in the open position.

[0020] In a further aspect of the invention, the lid is provided with a lifting rod attached to the lower surface thereof. The lifting rod has an internal diameter to allow the threaded adaptor to fit within it and ride up and down within the lifting rod as the lid is raised and lowered. The lifting rod is provided with grooves along the length thereof to accommodate the rods located in the central opening between the threaded adaptor and inside surface of the lifting plate.

[0021] In a further aspect of the invention, the table top segments have a wood base with a laminate surface attached thereto. The flexible hinge mechanism is provided by a piece of flexible material sandwiched between the wood base and the laminate surface of one side of adjacent table top segments. The opposite side of the adjacent table top segment is provided with a groove in the lower surface to accept one half of a piano-style hinge, the barrel of the piano-style hinge being slid over the lifting arms.

[0022] In an aspect of the invention, the foldable table assembly is provided with 10 lifting arms equally spaced around the lifting plate and the table top is provided with 20 table top segments.

[0023] In a further aspect of the invention, the table base is provided with a circular cross-section and the table top in the open position is circular.

[0024] In a further aspect of the invention, in order to maintain the proper position of the lifting plate as the table top assembly is being raised and lowered, a guide system is provided for the table top assembly.

[0025] In a further aspect of the invention, the guide system comprises guide channels attached to the interior of the table base wall on opposite sides thereof, arms are attached to opposite sides of the lifting plate at one end thereof the opposite end of the arms being provided with wheels which ride within the guide channels to maintain the lifting plate in the central position as it is raised and lowered by the screw jack assembly.

[0026] In a further aspect of the invention, the foldable table assembly is provided with a seat assembly which can be stored within the table base when in the closed position and may be extended to provide a suitable seat at a proper height for a dining table when in the open position.

[0027] In a further aspect of the invention, the foldable table assembly is provided with a pivot arm located between the lifting arm and the lower surface of the lid to allow for simultaneous raising and lowering of the lid as the table top is raised and lowered between the open and the closed position.

[0028] In a further aspect of the invention, the pivot arms are pivotally connected to the lifting arms and the lid to allow for 180° of movement at the pivotal connection between the pivot arm and the lifting arm and 90° of movement between the pivot arm and the lid to allow the lid to raise during the initial movement of the table top assembly when moving from the open to the closed position or vice versa and to be lowered to be either on top of the table top in the open position or to be on top of the table base to seal the table base in the closed position.

BRIEF DESCRIPTION OF THE DRAWINGS

[0029] Preferred embodiments of the present invention are illustrated in the attached drawings in which:

Figure 1 is a perspective view of a first preferable embodiment of the foldable table of the present invention in the closed position;

Figure 2 is a perspective view of the foldable table of Figure 1 in the open position;

Figure 3 is a perspective view of the table top of the foldable table of Figure 1 in the open position;

Figure 4 is a perspective view of the segments of the table top illustrating the flexible hinges between the segments;

Figure 5 is a bottom plan view of the section of the table top;

Figure 6 is a top plan view of the table top;

Figure 7 is a top plan view in detail of the table top illustrating the lifting portion and the arm for supporting the segments of the table top;

Figure 8 is a perspective view of the interior of the foldable table illustrating the jack with the lifting portion in the open position;

Figure 9 is a perspective view of the interior showing the lifting portion in an intermediate position;

Figure 10 is a perspective view of the foldable table showing the table top emerging from the base;

Figure 11 is a side view in cross section of the foldable table showing the table top in the open position;

Figure 12 is a side elevation view in cross section illustrating the table top in the process of being closed in the foldable position;

Figure 13 is a side elevation view in cross section of the foldable table with the table top in the closed position and the lid in the process of being closed;

Figure 14 is a side elevation view in cross section of the foldable table in the closed position;

Figure 15 is a perspective view of a further embodiment of the foldable table detailing an alternative mechanism for raising and lowering the lid;

Figure 16 is a side view of the embodiment of Figure 15 in the closed position;

Figure 17 is a side view of the embodiment of Figure 15 in the open position; and

Figure 18 is a perspective view of a further embodiment of a foldable table of the present invention in the open position; and

Figure 19 is a perspective view of the foldable table of Figure 18 in an intermediate position.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0030] A first preferred embodiment of a foldable table assembly of the present invention is illustrated in figures 1 to 14 indicated by the numeral 10. The foldable table assembly 10 has a table base 12 which is a hollow cylinder having a wall 14 and a bottom 16 and an open top 18. The table base may be manufactured from various types of materials such as wood, plastic, polymers and metal. The foldable table assembly 10 is provided with a lid 20 which covers the interior of the table base in the fully closed position as illustrated in figure 1. As will be explained further below the operation of the folding table assembly 10 of the present invention may be electronically controlled utilizing for example a wireless transmitter 22 which interacts with a receiver 24 located within the table base 12 to operate the jacking mechanism.

[0031] The foldable table assembly 10 is illustrated in the open position in figure 2. The foldable table assembly 10 has a table top assembly 30 comprised of a plurality of table top segments 32, a pair of such segments being provided between lifting arms 34 which are connected to a jack unit to raise and lower the table top assembly as will be described hereinbelow. As is shown in figure 2 the lid 20 acts as a serving platform when the foldable table assembly 10 is in the open position. Preferably the lid 20 may be provided with a Lazy Susan type assembly to improve the serving capability of the lid 20 when the foldable table assembly 10 is in the open position. Preferably, the foldable table assembly 10 has ten lifting arms 34 and ten pairs of table top segments 32 or twenty table top segments 32.

[0032] The table top segments 32 are preferably constructed of wood, metal or plastic, most preferably having a wood base 36 with a laminate surface 38 attached thereto. As illustrated in the figures the table top assembly 30 has the pair of table top segments 32 provided between lifting arms 34 and are attached to one another by a flexible hinge mechanism 40. Preferably the flexible hinge mechanism is provided by a piece of flexible material 40 such as rubber or flexible plastic sandwiched between the wood base 36 and the laminate surface 38. The provision of the flexible hinge mechanism allows for the pivot point between the table top segments 32 to be located at the table surface rather than the hinge mechanism. This allows the table top

segments to fold properly in the closed position while maintaining the tight connection between the segments 32 when the table top assembly 30 is in the open position.

[0033] The pairs of table top segments 32 joined together by the flexible hinge mechanism are attached to the lifting arms 34 at the outside edges thereof. The table top segments 32 are provided with a groove 42 in the lower surface to accept a piano style hinge 44. The barrel 46 of the piano style hinge 44 is slid over the lifting arm 34 and the plates 48 of the piano style hinge 44 are attached to the underside of the grooves 42 of the table top segment 32. In this way the combination of the piano style hinge 44 and the flexible hinges 40 allow the table top segments 32 to fold and unfold in the proper manner as the table top assembly 30 is moved between the closed and open positions as will be described hereinbelow.

[0034] The lifting arms 34 are attached to a lifting plate 50 as illustrated for example in figures 6 through 9. The lifting arms 34 are pivotally attached to the lifting plate 50 by means of receptacles 52 which allow the lifting arms 34 to pivot about the connection to the receptacles 52. This allows the lifting arms 34 and the attached table top segments 32 to easily move between the closed and open positions. In order to aid in the moving of the lifting arms 34 between the open and closed positions it is preferred if a biased lifting mechanism 54 is provided to move the lifting arms 34 into an upward position particularly during the closing of the table top assembly 30.

[0035] The table top assembly 30 is moved between the open and close position by means of a Jack assembly 56 which is preferably a screw Jack assembly. The screw Jack assembly 56 is controlled by the wireless transmitter 22 and receiver 24 which contains the circuitry to control the operation of a motor 58 of the screw Jack assembly 56. Motor 58 is connected to a gear drive unit 60 which operates the screw rod 62 of the screw Jack assembly 56. One end of the screw rod 62 is contained within the gear drive unit 60 such that the operation of the motor 58 and attached gear drive unit 60 causes the screw rod 62 to rotate to allow the table top assembly 30 to be moved between the closed and open positions. The lifting plate 50 is connected to the screw rod 62 by means of a threaded adapter 64 which contains threads on the interior thereof which are complementary to the threads of the screw rod 62. Lifting plate 50 has a central opening 66 to contain the threaded adapter 64 which is attached to the lifting plate by rods 68 extending between the exterior surface of the threaded adapter 64 and the interior surface of the central opening 66 of the lifting plate 50. The provision of the central opening 66 allows for the

passage of the lifting rod 70 which is attached to the lid 20 to allow the lid 20 to be raised and lowered during the operation of the table top assembly 10.

[0036] In order to maintain the proper position of the lifting plate 50 as the table top assembly 30 is being raised and lowered between the open and closed positions, a guide system is provided for the foldable table assembly 10. Guide channels 72 are attached to the interior of the table base wall on opposite sides thereof. Arms 74 are attached to opposite sides of the lifting plate 50 at one end thereof. The opposite end of the arms 74 are provided with wheels 76 which ride within the guide channels 72. In this way the lifting plate 50 is maintained in the central position as it rides up and down the screw rod 62.

[0037] As noted above the lid 20 is provided on its underside with the lifting rod 70. Lifting rod 70 in this embodiment is a hollow tube having an internal diameter to allow the threaded adapter 64 to fit within it and ride up and down within the lifting rod 70 as the lid 20 is raised and lowered. Lifting rod 70 is provided with two grooves 78 along the length thereof to accommodate the rods 68 located in the central opening 66 between the threaded adapter 64 and the inside surface of the lifting plate 50. In this embodiment, in order to allow the lid 20 to be raised and lowered at the same time as the lifting plate 50 the lower end of the grooves 78 are provided with a side cut opening 80 to engage the connecting rods 68. The purpose and operation of this will be explained hereinbelow.

[0038] The operation of the embodiment of the foldable table assembly 10 of the invention will now be explained with reference to the figures particularly figures 10 through 13. Figure 10 illustrates the foldable table top assembly 10 in the intermediate position between the open and closed position. To take the table from the fully closed position as illustrated in figure 1 to the fully open position illustrated in figure 2 the Jack assembly 56 is operated by pressing the appropriate button on the wireless transmitter 22. This activates the motor 58 which drives the gear drive unit 60 causing the screw rod 62 to rotate and move the threaded adapter 64 and attached lifting plate 50 upwardly. As the lifting plate moves upwardly the collapsed table top assembly 30 is raised from within the table base 12. As the lid 20 is directly connected to the lifting plate 50 by means of the side cut opening 80 at the bottom of the groove 78 being in contact with the connecting rod 68, the lid 20 rises at the same rate as the collapsed table top assembly 30. As the table top assembly 30 emerges from the table base 12 the weight of the table top assembly, in particular the table top segments 32, causes it to fan outwardly and the table

top segments 32 begin to pivot about the piano style hinges 44 attached to the lifting arms 34 and the wood base 36 and the flexible hinges 40 connecting the pair of table top segments 32 together. Once the table top assembly 30 is in the fully open position the motor 58 is stopped preferably as a result of a sensor detecting the fully open position of the table top assembly 30. The side cut opening 80 of the lifting rod 70 is disengaged from the connecting rod 68 to allow the connecting rod 68 to engage with the groove 78. This allows the lifting rod 70 and attached lid 20 to be lowered to rest against the opened table top assembly 30.

[0039] To move the foldable table assembly 10 from the open to the closed position the lid 20 is raised by allowing the connecting rod 68 to pass along the groove 78 in the lifting rod 70 until the side cut opening 80 engages the connecting rod 68 and holds the lid 20 in the raised position. Jack assembly 56 is operated by pressing the appropriate button on the wireless transmitter 22. This activates the motor 58 which drives the gear drive unit 60 causing the screw rod 62 to rotate and move the threaded adapter 64 and attached lifting plate 50 downwardly. As the lifting plate moves downwardly the table top assembly 30 is begun to be pulled into the table base 12. As the table top assembly begins to be pulled within the base 12, the lifting arms 34 begin to rotate upwardly about the receptacles 52 and the biased lifting means 54 aids in the upward motion of the lifting arms 34. The upward motion of the lifting arms 34 causes the table top segments to rotate about the piano style hinge 44 and flexible hinge 42 and begin to move together to the closed position. As the operation is continued the lifting plate 50 and attached table top assembly 30 is drawn within the table base 12 and lowered to the closed position. The lid 20 is then lowered until the foldable table assembly 10 is in the closed position as illustrated in figure 1.

[0040] The foldable table assembly 10 of the present invention may be also provided with a seat assembly 82 which can be stored within the table base 12 when in the closed position and may be extended to provide a suitable seat at a proper height for a dining table when in the open position. An example of such a seat assembly is described in applicants earlier US patent 8,240,755 the disclosure of which is incorporated herein by reference.

[0041] The foldable table assembly 10 of the present invention provides for numerous advantages over prior art designs. The first advantage is the use of the single lifting arms 34 which results in a simpler design for manufacturing of the collapsible table as compared to some of the prior art designs. The use of the screw Jack assembly 56 allows for the maximum

length of the table top segments 32 and thus a very usable table top assembly 32 allowing the foldable table assembly to be easily utilized as a dining table. Of particular advantage is the use of the flexible hinges 40 between the pairs of table top segments attached to the lifting arms 34. The use of the flexible hinges allows the pivot point for the rotation of the pairs of table top segments to be located at the table top surface rather than at the hinge location at a point below the surface as would be the case if typical barrel hinges were utilized. By providing the rotation point at the surface in utilizing the flexible hinge the table top surface in the open position has a smooth finish with no projections rising above the surface as would be the case with more typical hinges. This allows the table top to be easily utilized as a dining surface allowing the dishes and other utensils to be easily moved over the surface without encountering any projections.

[0042] An alternative arrangement for raising and lowering the lid in conjunction with raising and lowering the table top is shown in the embodiment illustrated in Figures 15 to 17 generally indicated by the numeral 100. The embodiment illustrated in these figures shows a lifting mechanism to simultaneously raise and lower the table top and lid which are not shown in the drawings for the purpose of illustrating the lifting mechanism. The full embodiment of the foldable table will have the table base and table top segments as was shown in the previous embodiment. In addition, the embodiment illustrated in Figures 15 to 17 only shows two of the lifting arms for the purposes of illustration. The full embodiment would have a plurality of such lifting arms such as the ten as shown in the previous embodiment.

[0043] Similar to the first embodiment the lifting arms 102 are attached to a lifting plate 104 which is in turn connected to the screw rod 106 by means of a threaded adaptor 108 which contains threads on the interior thereof which are complementary to the threads of the screw rod 106. Similar to the first embodiment the threaded adaptor 108 is contained within a central opening 110 of the lifting plate attached to the lifting plate 104 by rods 112 extending between the exterior surface of the threaded adaptor 108 and the interior surface of the central opening of the lifting plate 104. The provision of the central opening 110 allows for the passage of the lifting rod 114 which is attached to the lid 116 to allow the lid 116 to be raised and lowered during operation of the table top assembly 100. The lifting rod 114 is a hollow tube having an internal diameter to allow the threaded adaptor 108 to fit within it and ride up and down within the lifting rod 114 as the lid 116 is raised and lowered. The lifting rod 114 is provided with two grooves 118 along the length thereof to accommodate the rods 112 located in the central opening 110 between the threaded adaptor 108 and the inside surface of the lifting plate 104.

[0044] In order to raise and lower the lid 116 at the same time that the table top assembly is being raised and lowered, pivot arms 120 are provided between the lifting arms 102 and the lid 116. The pivot arms 120 are pivotally attached near the mid-point of the lifting arms 102 at one end and to a plate 122 provided at the top of the lifting rod 114 to which the lid 116 is to be attached. The pivotable connection between the pivot arms 120 and lifting arms 102 and plate 122 of the lifting rod 114 allow for 180° of movement at the pivotable connection between the pivot arm 120 and the lifting arm 102 and 90° of movement between the pivot arm 120 and the plate 122 at the top of the lifting rod 114. In the closed position, as illustrated in Figure 16, the pivot arm 120 lies approximately parallel to the outer end of the lifting arm 102 and in the open position, as illustrated in Figure 17, the pivot arm 120 is located above the inner end of the lifting arm 102 connected to the lifting plate 108.

[0045] The operation of this embodiment of the foldable table assembly 100 will now be explained with reference to Figures 15 to 17. Figure 15 illustrates a foldable table assembly 100 in the intermediate position between the open and closed position. To take the table 100 from the fully closed position, as illustrated in Figure 16, to the fully open position, illustrated in Figure 17, the jack assembly (not shown) is operated by activating the motor which drives the gear driving and causing the screw rod 106 to rotate and move the threaded adaptor 108 and attached lifting plate 104 upwardly. As the lifting plate 104 moves upwardly, the collapsed table top assembly which is attached to the lifting arms 102 is raised within the table base. As the lid 116 is connected to the lifting arms 102 by means of the pivot arms 120, the lid 116 rises up as the collapsed table top assembly is lifted from within the base by the upward movement of the lifting plate 104. As the table top assembly emerges from the base, the weight of the table top assembly, in particular the table top segments, causes it to fan outwardly and the lifting arms 102 begin to pivot about the connection to the lifting plate 104. This in turn causes the pivot arms 120 connected between the lifting arms 102 and the lid 116 to pivot, drawing the lid 116 closer to the lifting plate 104. Once the table top assembly is in the fully open position, the pivot arms 102 have completed their pivoting bringing the lid 116 into the open position, as illustrated in Figure 17.

[0046] To move the foldable table assembly 100 from the open to the closed position, the jack assembly is operated which activates the motor to drive the gear drive unit causing the screw rod 106 to rotate and move the threaded adaptor 108 and attached lifting plate 104 downwardly. As the lifting plate 104 moves downwardly, the table top assembly has begun to

be pulled into the table base. As the table top assembly begins to be pulled within the base the lifting arms 102 rotate upwardly about the connection to the lifting plate 104 causing the pivot arms 120 to pivot and raise the lid 116. As the operation is continued the lifting plate 104 and attached table top assembly is drawn within the table base until the lifting arms 102 have come to the fully closed position as shown in Figure 16. The attached pivot arms 120 allow the lid 116 to be brought to the closed position as well. The provision of the pivot arm 120 attached between the lifting arms 102 and the lid 116 allow the lid 116 to be raised and lowered in conjunction with raising and lowering the table top without requiring additional measures such as manually moving the lid once the table assembly is in the open or closed position. This provides for a much simpler operation of the foldable table assembly.

[0047] While the preferred embodiments illustrated and described above have a generally cylindrical base and a round table top, other shapes may also be provided utilizing the above feature. For example, as shown in Figures 18 and 19, the base may 202 be provided as a cube and the table top segments 204 and 206 may be provided to provide a shape other than a round shape such as for example, an octagon or other geometric shape.

[0048] The embodiment illustrated in Figures 18 and 19 utilizes foldable table top connections similar to the other embodiments at the corners of the cube. The segments 204 at the corners are connected together by a rectangular segment 206 which are attached to the foldable segments 204 by means of the flexible connection. The lifting plate 208 is a square shape with features similar to that of the other embodiment utilizing the lifting arm attached to the lifting plate which is driven by a screw jack assembly (details not shown but similar to the first embodiment of Figures 1 to 14) and preferably utilizes the lid which is able to be raised and lowered with the table top assembly utilizing the pivot arm arrangement as described for the embodiment of Figures 15 to 17.

[0049] Although various preferred embodiments of the present invention have been described herein in detail, it will be appreciated by those of skill in the art that variations may be made thereto and all such variations are included within the scope of the present invention.

CLAIMS:

1. A foldable table assembly movable between an open and a closed position, the foldable table assembly comprising a base including a base wall surrounding a hollow interior for containing a folding table, the folding table being movable between a closed folded and an open unfolded position and a screw Jack assembly moving the folding table between the folded position inside the hollow interior of the base and unfolded substantially horizontal position removed from the hollow interior wherein operation of the Jack assembly permits the folding and unfolding of the table, the foldable table assembly having a lifting plate engaged with the Jack having a plurality of lifting arms each arm having a first end attached to the lifting plate and a pair of table top segments hingedly connected between a pair of said lifting arms, the pair of table top segments being connected one to another by means of a flexible hinge to allow the pivot point between the pairs of table top segments to be located at the surface of the table top segments, wherein the table top surface in the open unfolded position has a smooth finish with no projections rising above the surface.
2. A foldable table top assembly according to claim 1 wherein the foldable table assembly is provided with a lid which covers the top of the table top assembly in the closed position and acts as a serving platform when the foldable table assembly is in the open position.
3. A foldable table top assembly according to claim 2 wherein the screw jack assembly comprises a motor connected to a gear drive which operates a screw rod, one end of the screw rod being contained within the gear drive unit such that the operation of the motor and attached gear drive unit causes the screw rod to rotate to raise and lower the lifting plate and allow the table top assembly to be moved between the closed and open positions.
4. A foldable table top assembly according to claim 3 wherein the lifting plate is connected to the screw rod by means of a threaded adaptor which contains threads on the interior thereof which are complementary to the threads of the screw rod.

5. A foldable table top assembly according to claim 4 wherein the lifting plate has a central opening to contain the threaded adaptor which is attached to the lifting plate by rods extending between the exterior surface of the threaded adaptor and the interior surface of the central opening of the lifting plate.
6. A foldable table top assembly according to claim 5 wherein the lid is provided with a Lazy Susan type assembly to improve the serving capability of the lid when the foldable table assembly is in the open position.
7. A foldable table top assembly according to claim 6 wherein the lid is provided with a lifting rod attached to the lower surface thereof, the lifting rod having an internal diameter to allow the threaded adaptor to fit within it and ride up and down within the lifting rod as the lid is raised and lowered, the lifting rod being provided with grooves along the length thereof to accommodate the rods located in the central opening between the threaded adaptor and inside surface of the lifting plate.
8. A foldable table top assembly according to claim 2 wherein the table top segments have a wood base with a laminate surface attached thereto, the flexible hinge mechanism being provided by a piece of flexible material sandwiched between the wood base and the laminate surface of one side of adjacent table top segments, the opposite side of the adjacent table top segment being provided with a groove in the lower surface to accept a ½ of a piano-style hinge the barrel of the piano-style hinge being slid over the lifting arms.
9. A foldable table top assembly according to claim 8 wherein the foldable table assembly is provided with 10 lifting arms equally spaced around the lifting plate and the table top is provided with 20 table top segments.
10. A foldable table top assembly according to claim 9 wherein the table base is provided with a circular cross-section and the table top in the open position is circular.

11. A foldable table top assembly according to claim 2 wherein in order to maintain the proper position of the lifting plate as the table top assembly is being raised and lowered, a guide system is provided for the table top assembly.
12. A foldable table top assembly according to claim 11 wherein the guide system comprises guide channels attached to the interior of the table base wall on opposite sides thereof, arms attached to opposite sides of the lifting plate at one end thereof, the opposite end of the arms being provided with wheels which ride within the guide channels to maintain the lifting plate in the central position as it is raised and lowered by the screw jack assembly.
13. A foldable table top assembly according to claim 2 wherein the foldable table assembly is provided with a seat assembly which can be stored within the table base when in the closed position and may be extended to provide a suitable seat at a proper height for a dining table when in the open position.
14. A foldable table top assembly according to claim 7 wherein the foldable table assembly is provided with a pivot arm located between the lifting arm and the lower surface of the lid to allow for simultaneous raising and lowering of the lid as the table top is raised and lowered between the open and the closed position.
15. A foldable table top assembly according to claim 14 wherein the pivot arms are pivotally connected to the lifting arms and the lid to allow for 180° of movement at the pivotal connection between the pivot arm and the lifting arm and 90° of movement between the pivot arm and the lid to allow the lid to raise during the initial movement of the table top assembly when moving from the open to the closed position or vise versa and to be lowered to be either on top of the table top in the open position or to be on top of the table base to seal the table base in the closed position.

Fig. 1

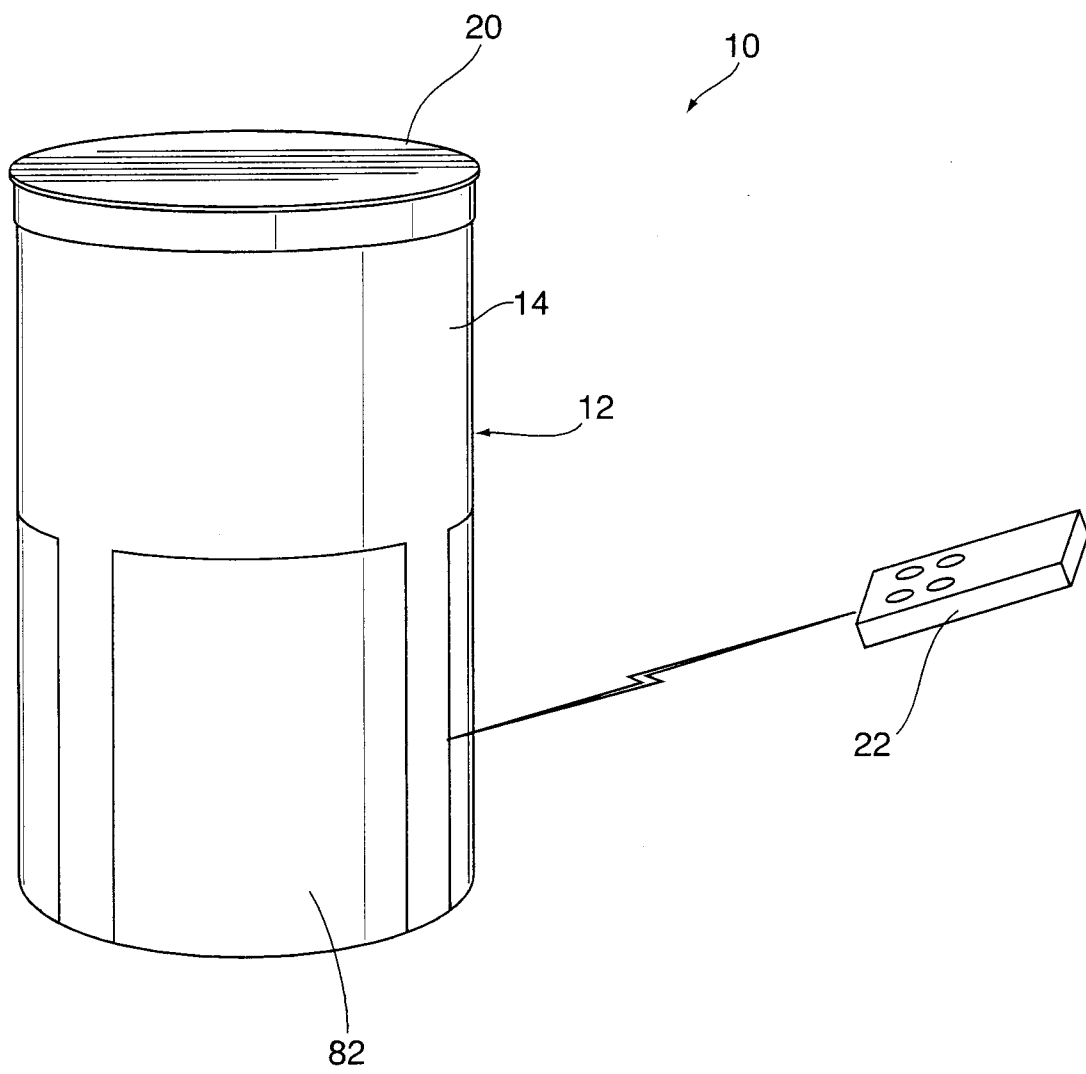
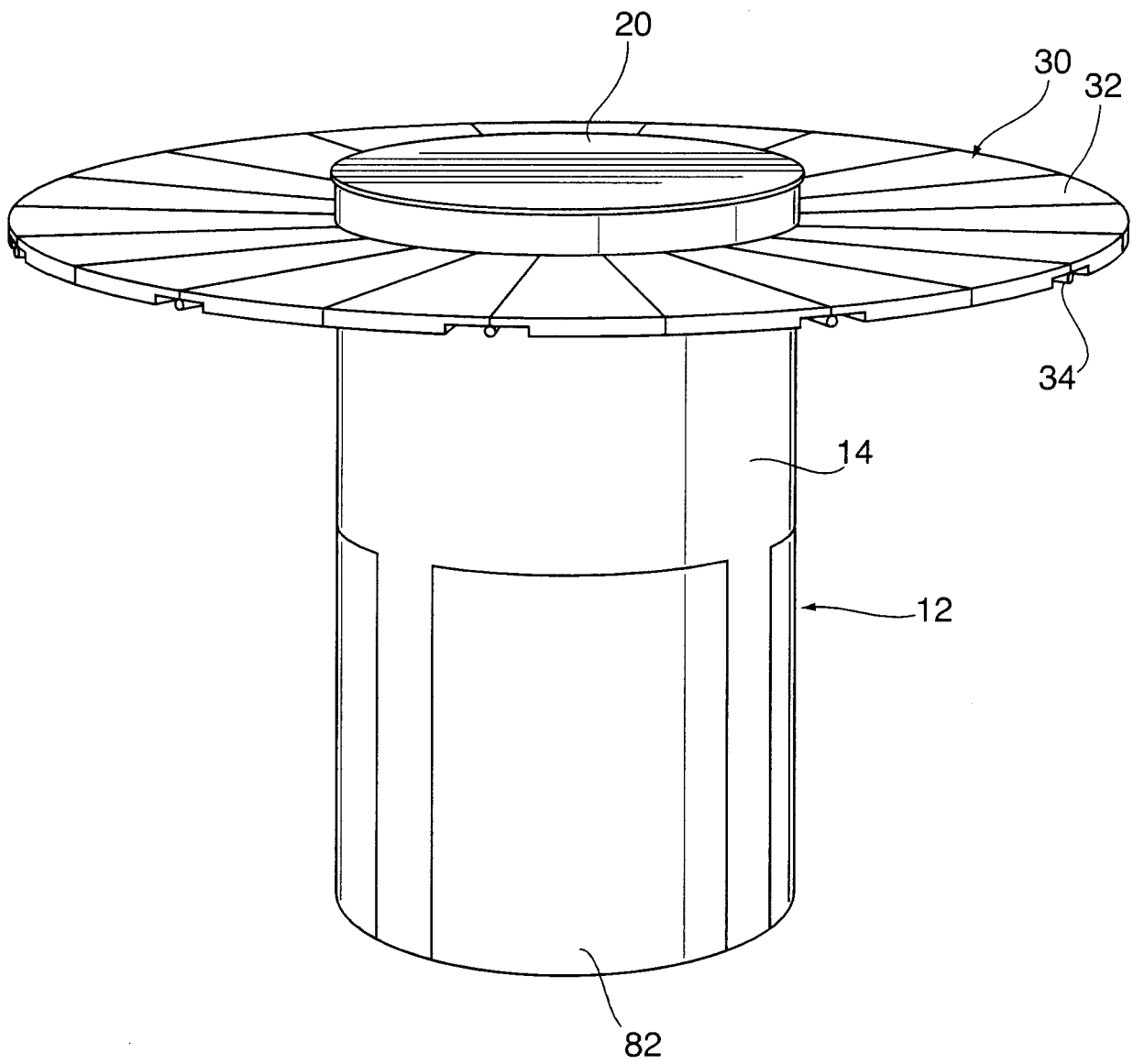
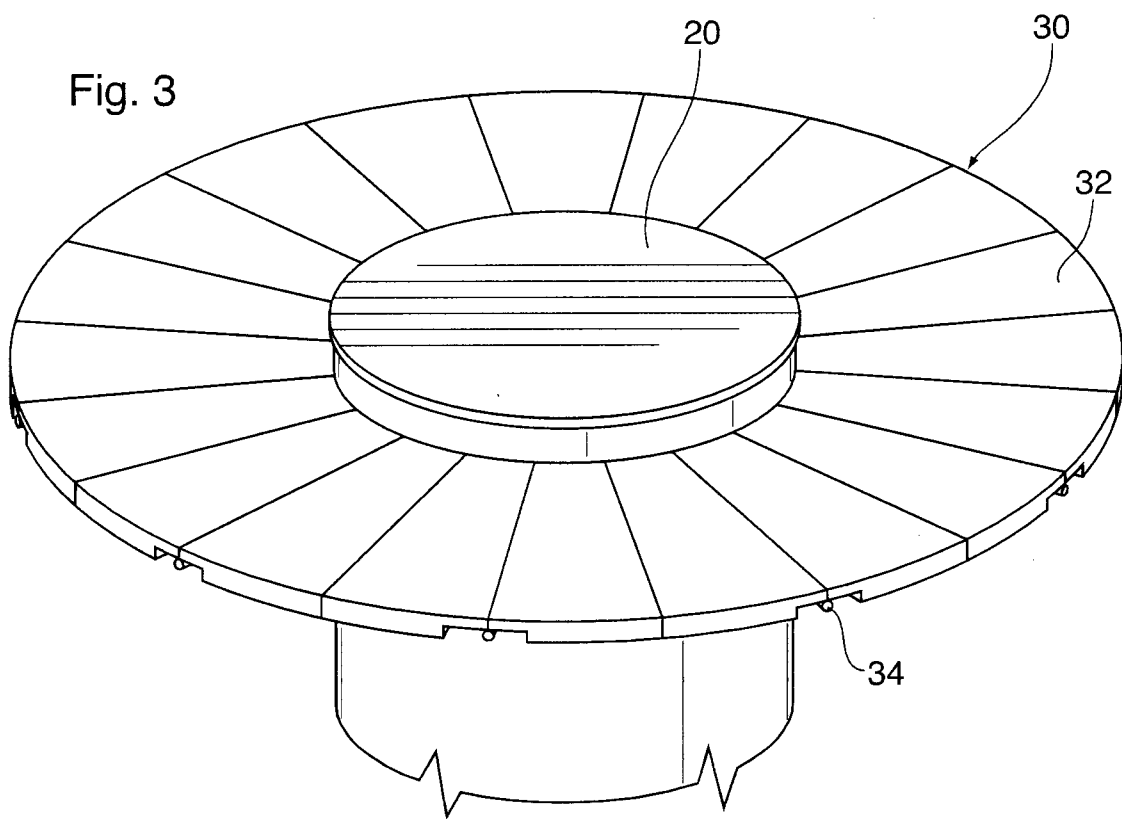


Fig. 2



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Fig. 3



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Fig. 4

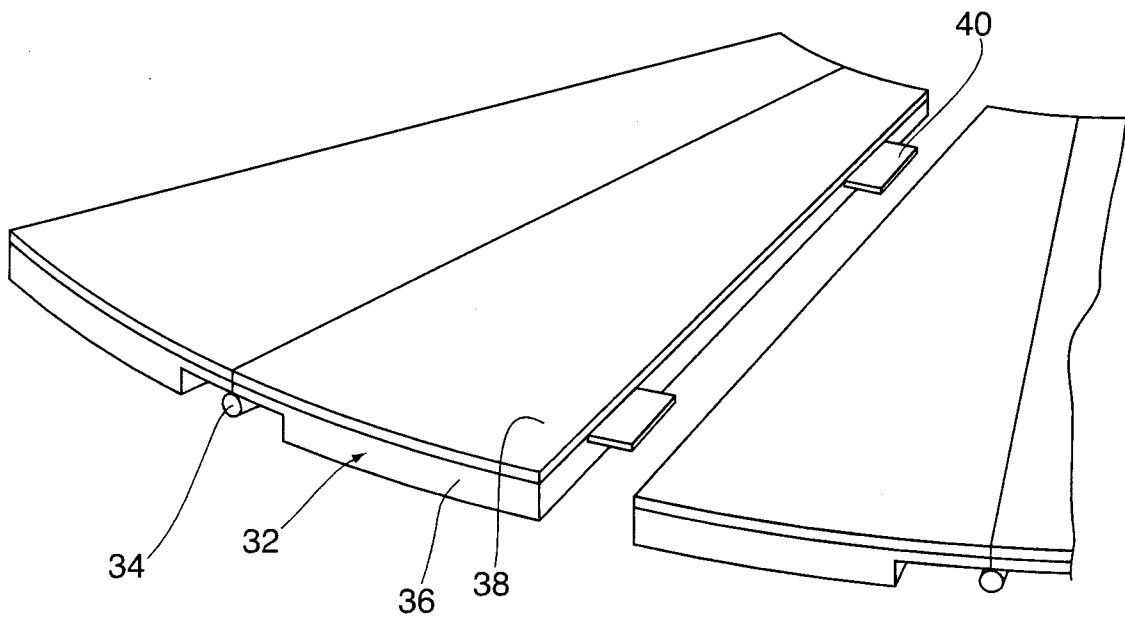


Fig. 5

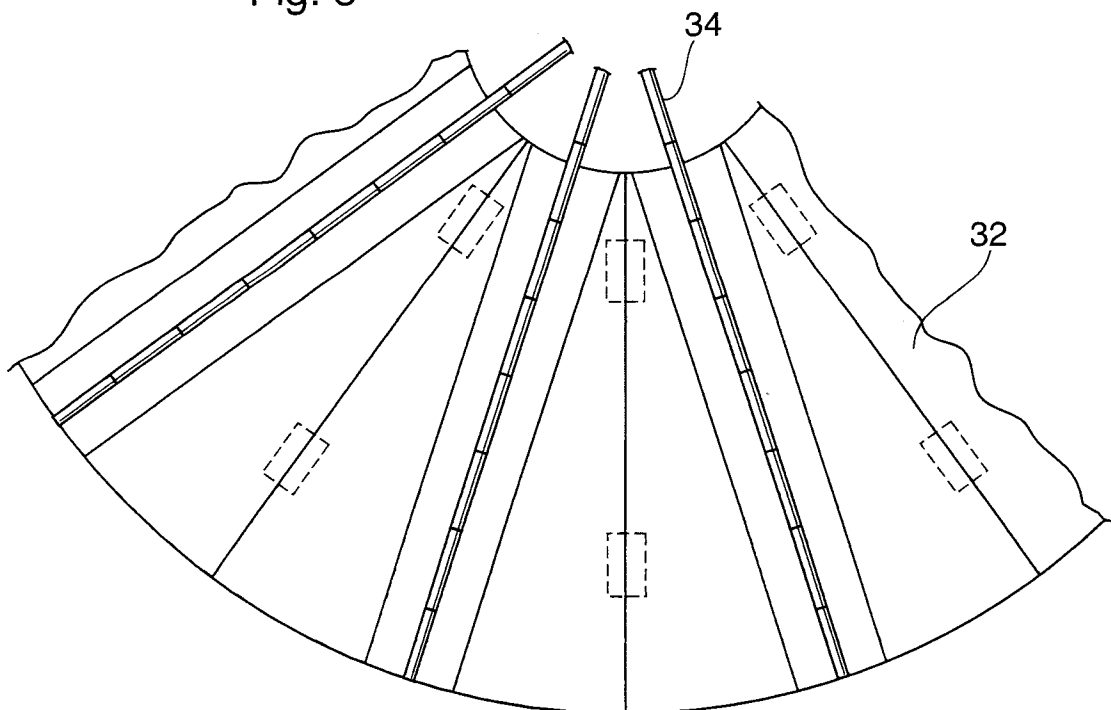


Fig. 6

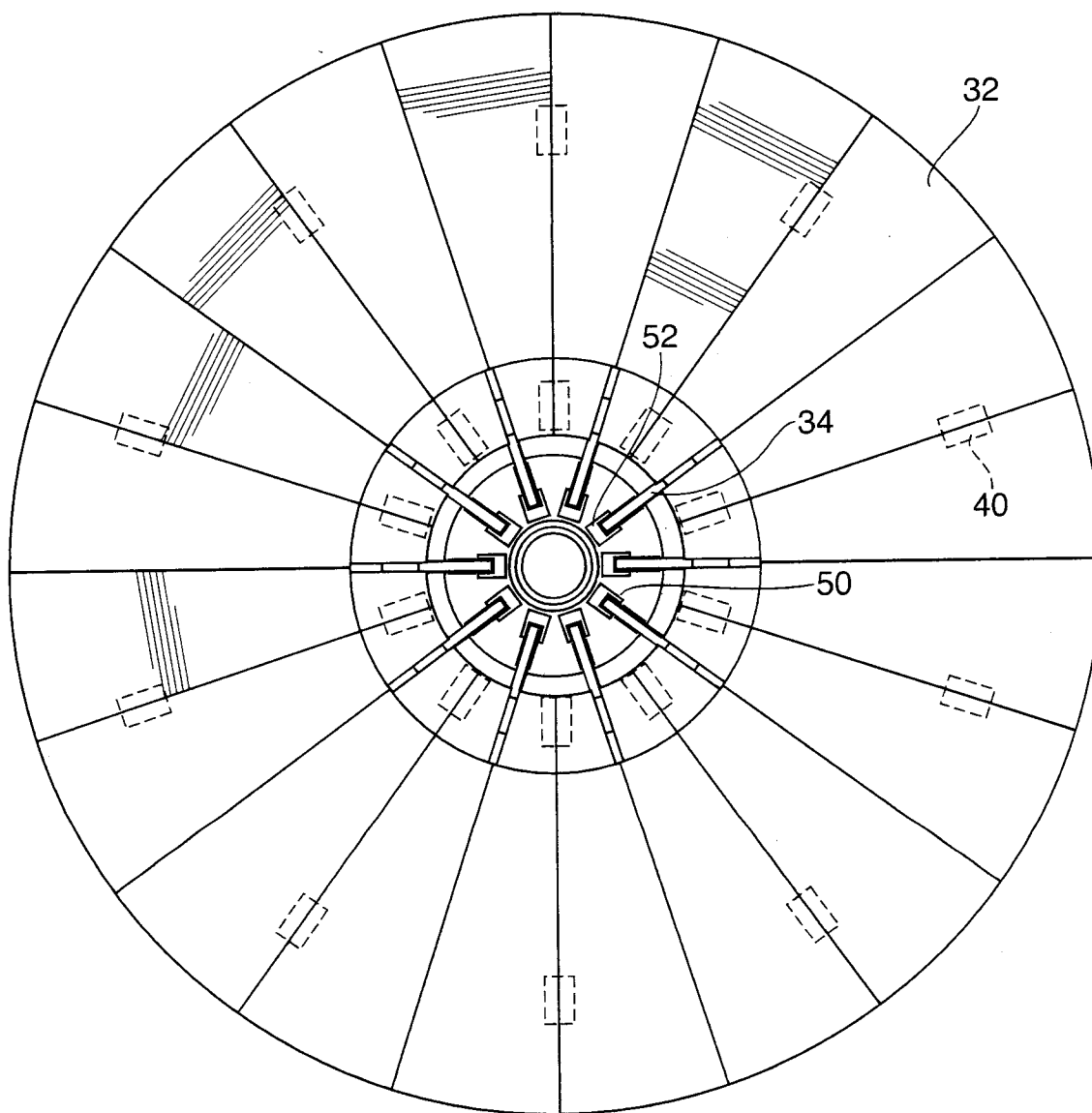
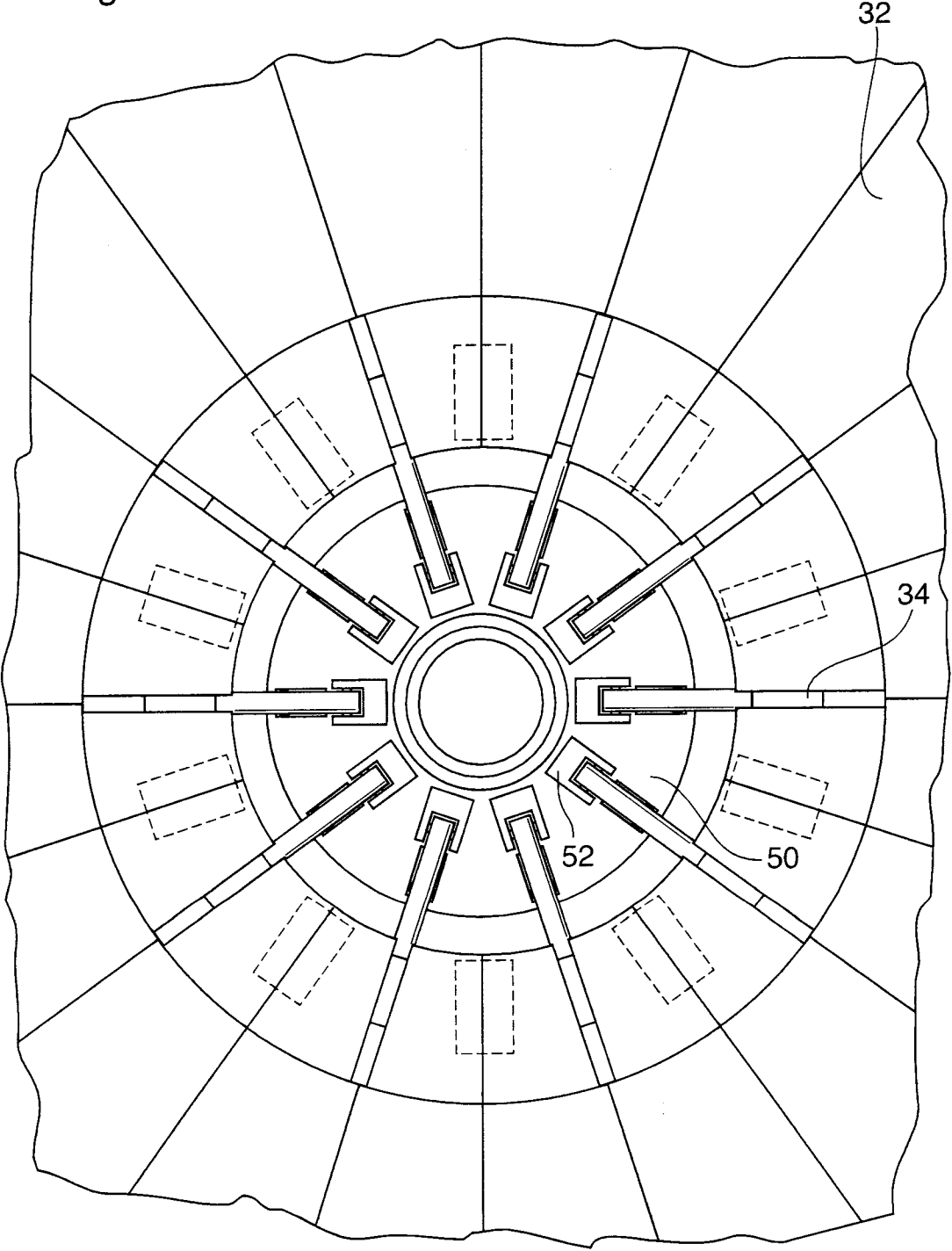
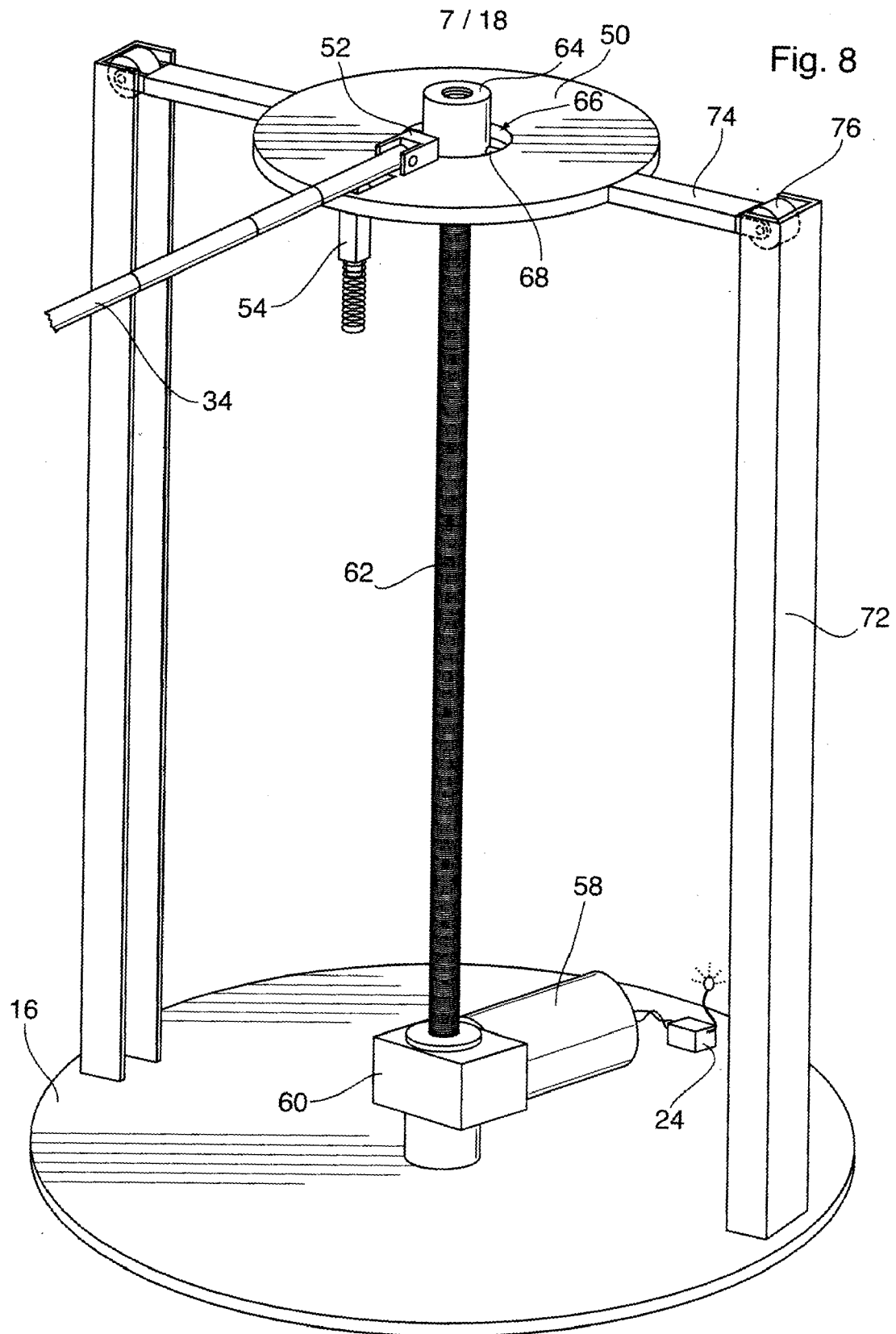


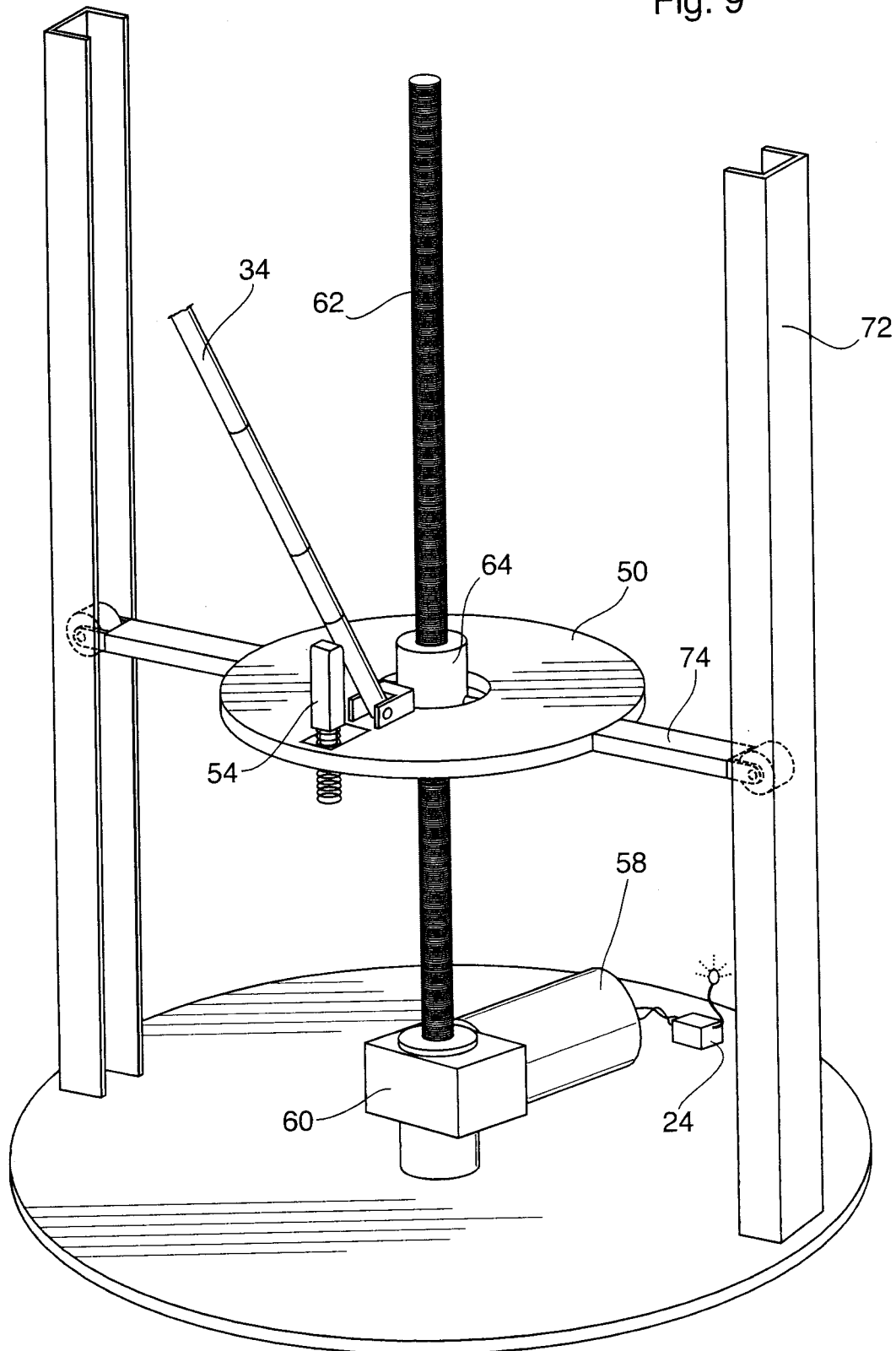
Fig. 7





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Fig. 9



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Fig. 10

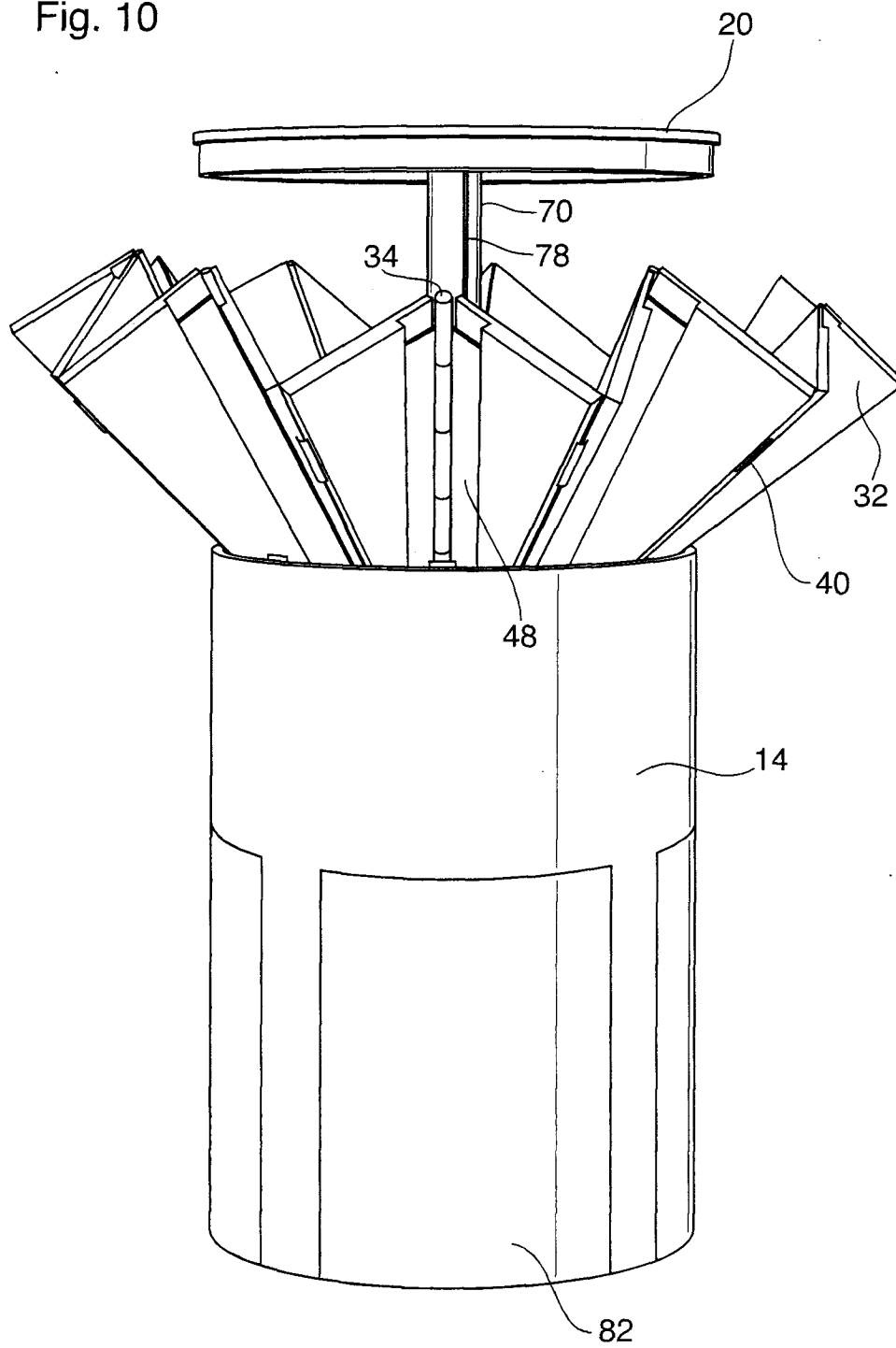


Fig.11

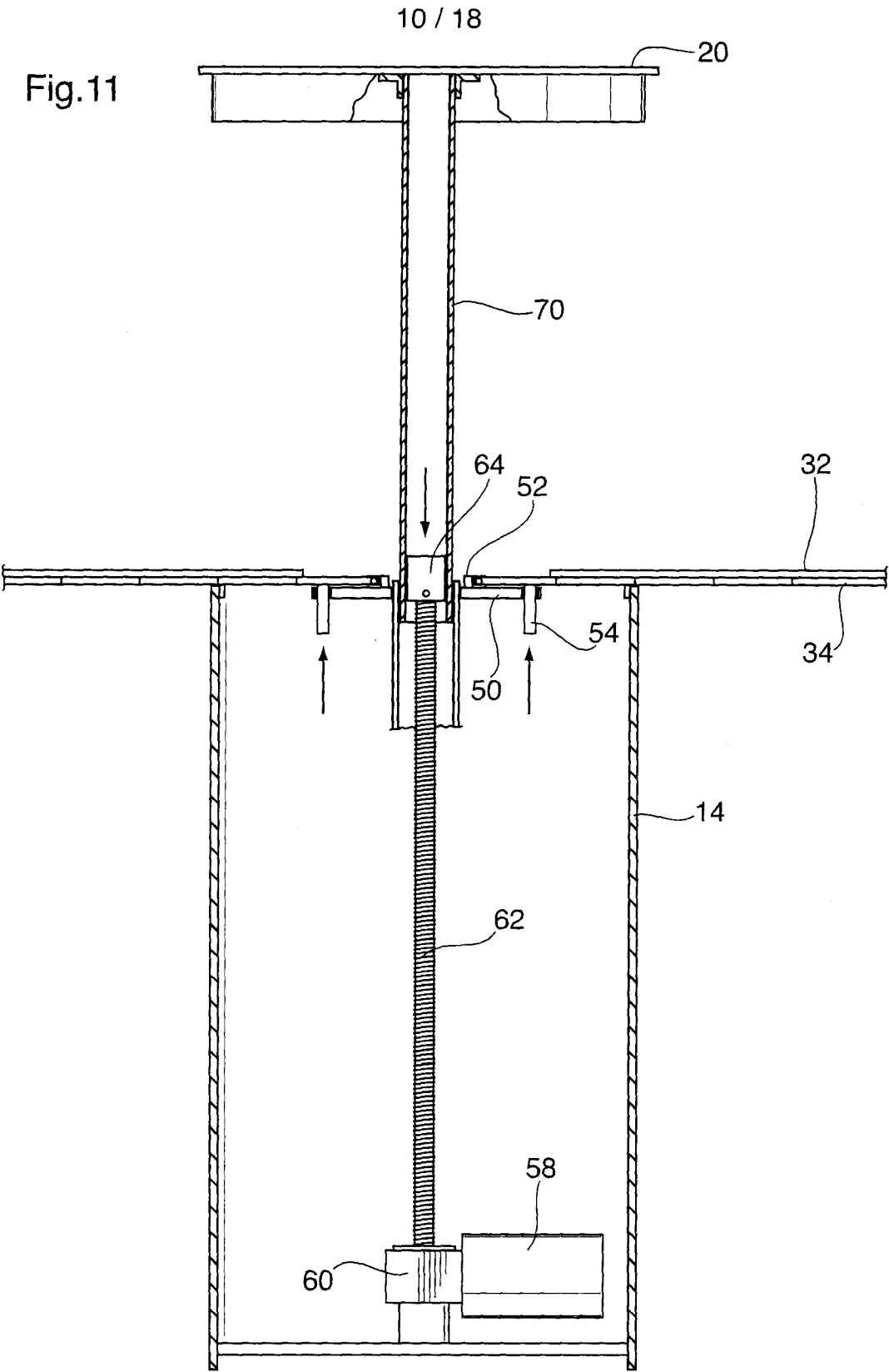


Fig. 12

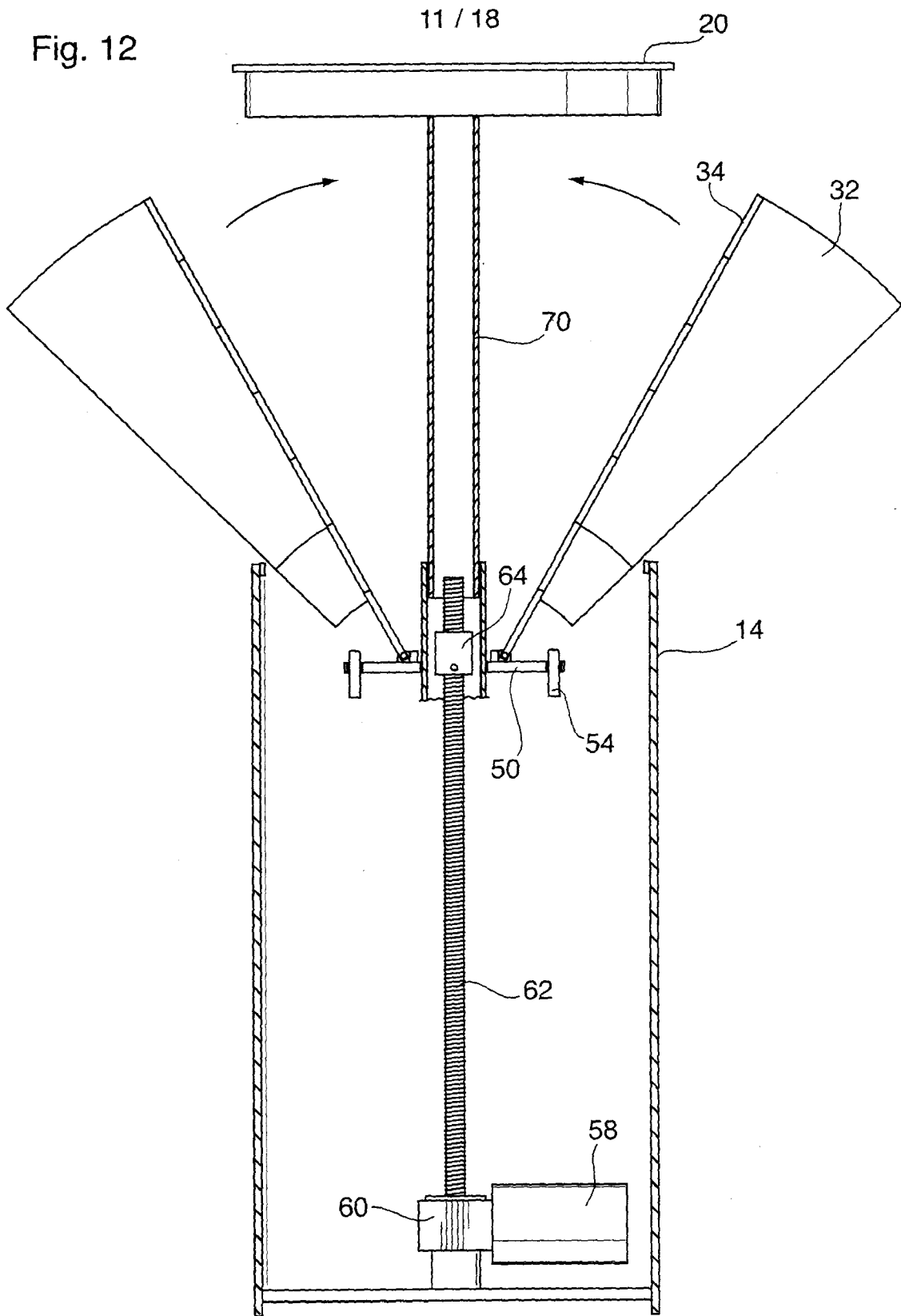
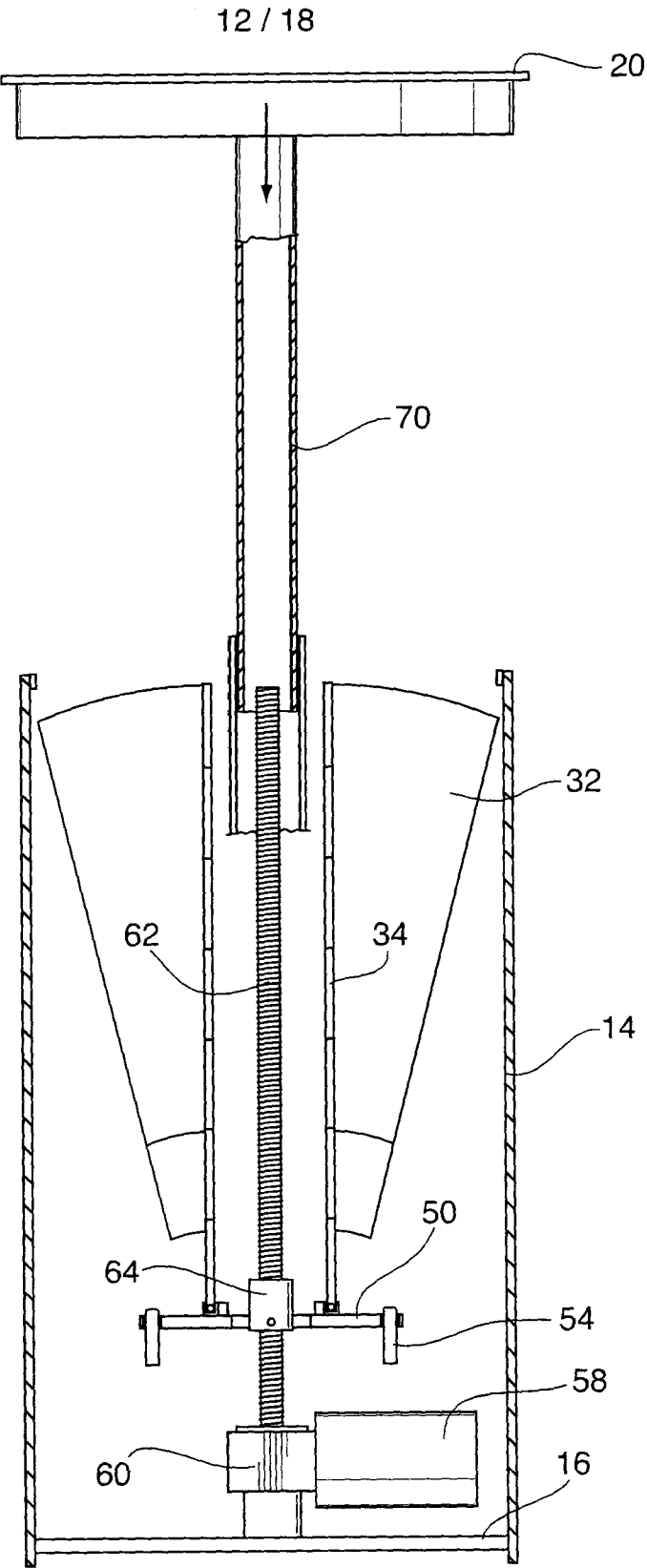
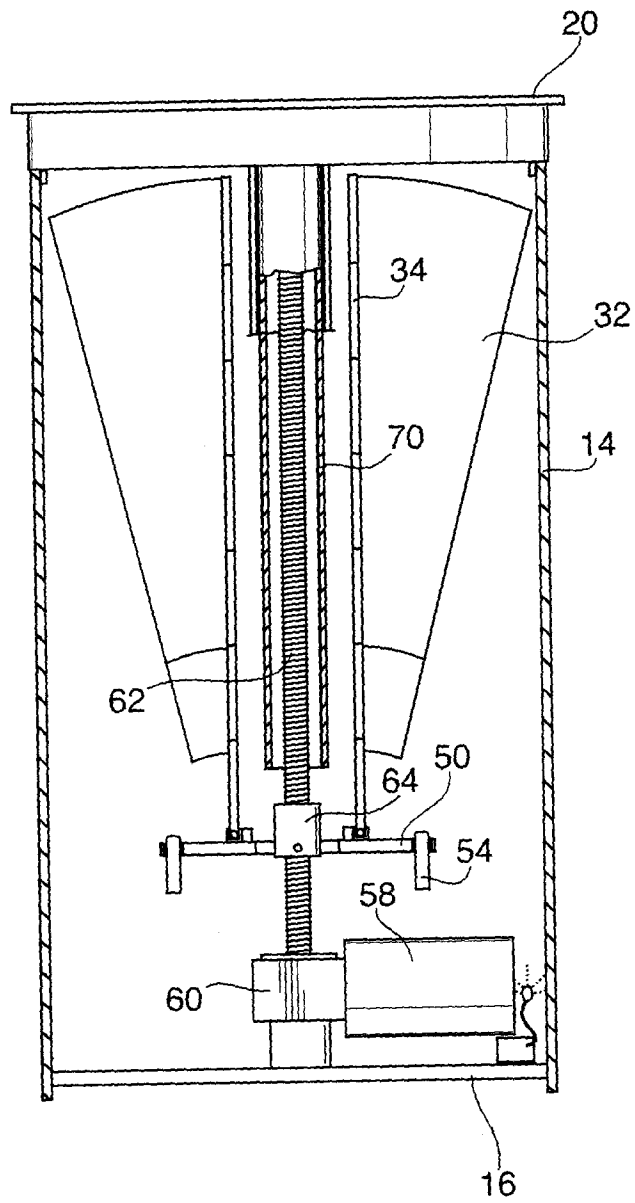


Fig. 13



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Fig. 14



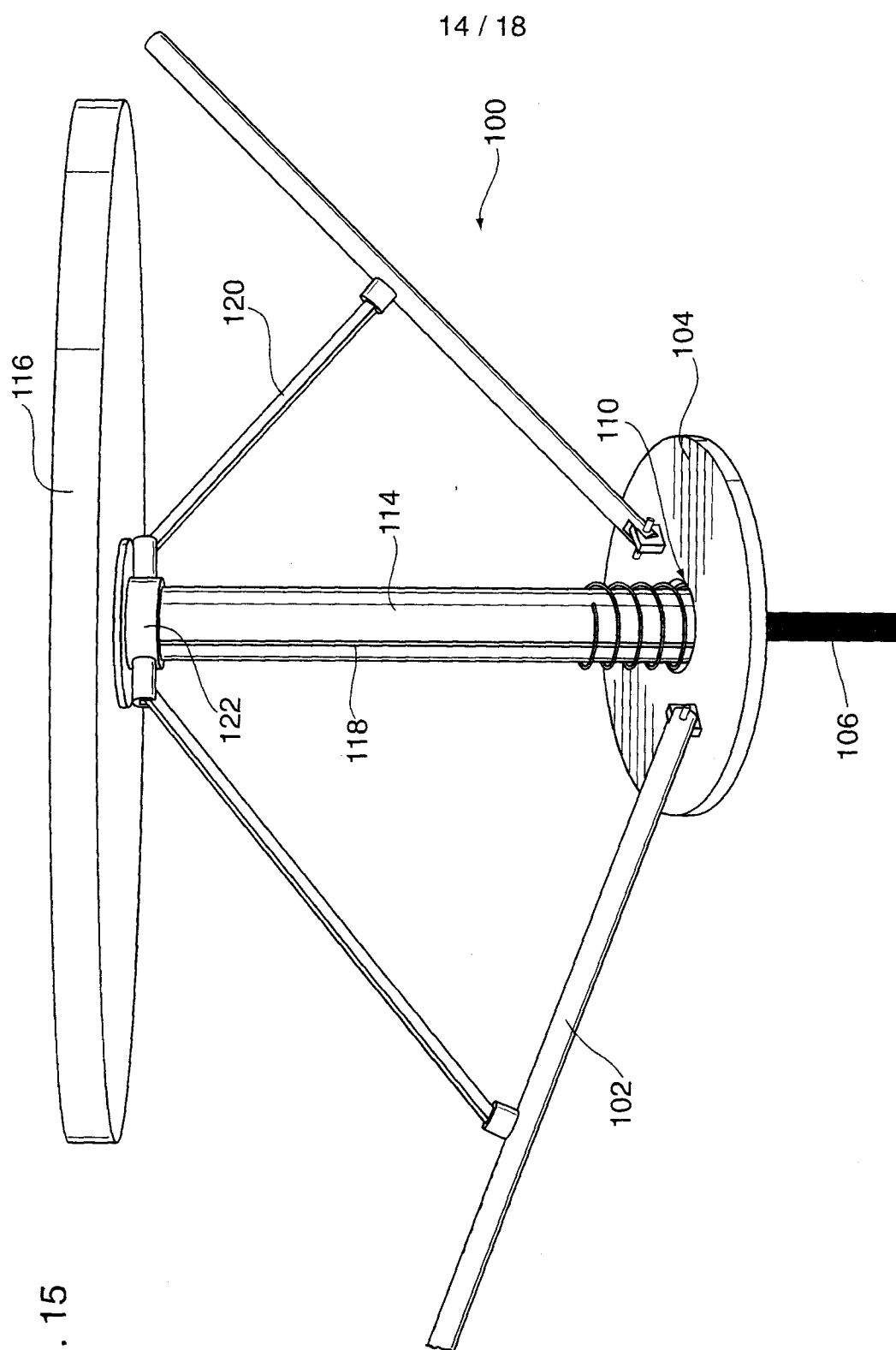
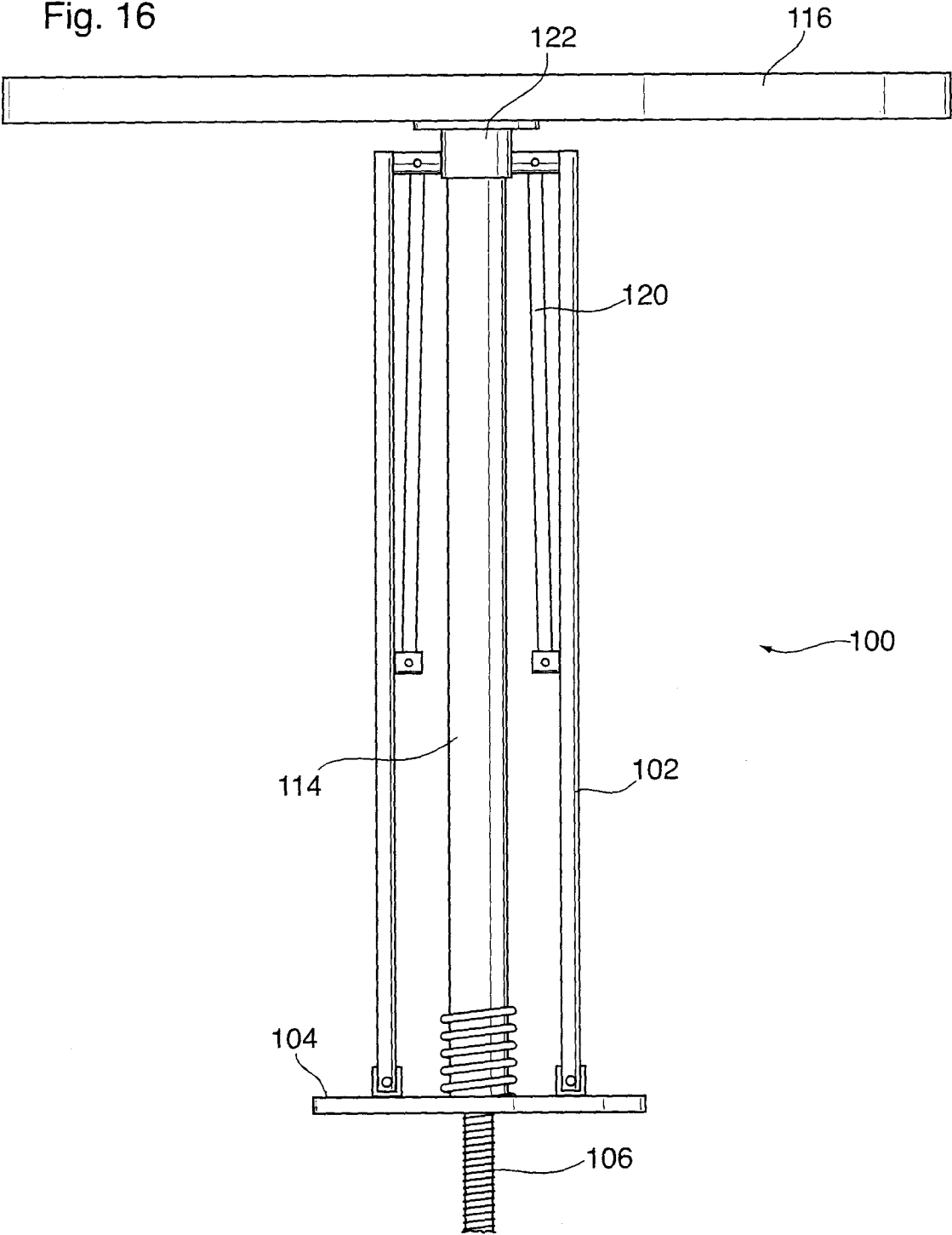


Fig. 15

Fig. 16



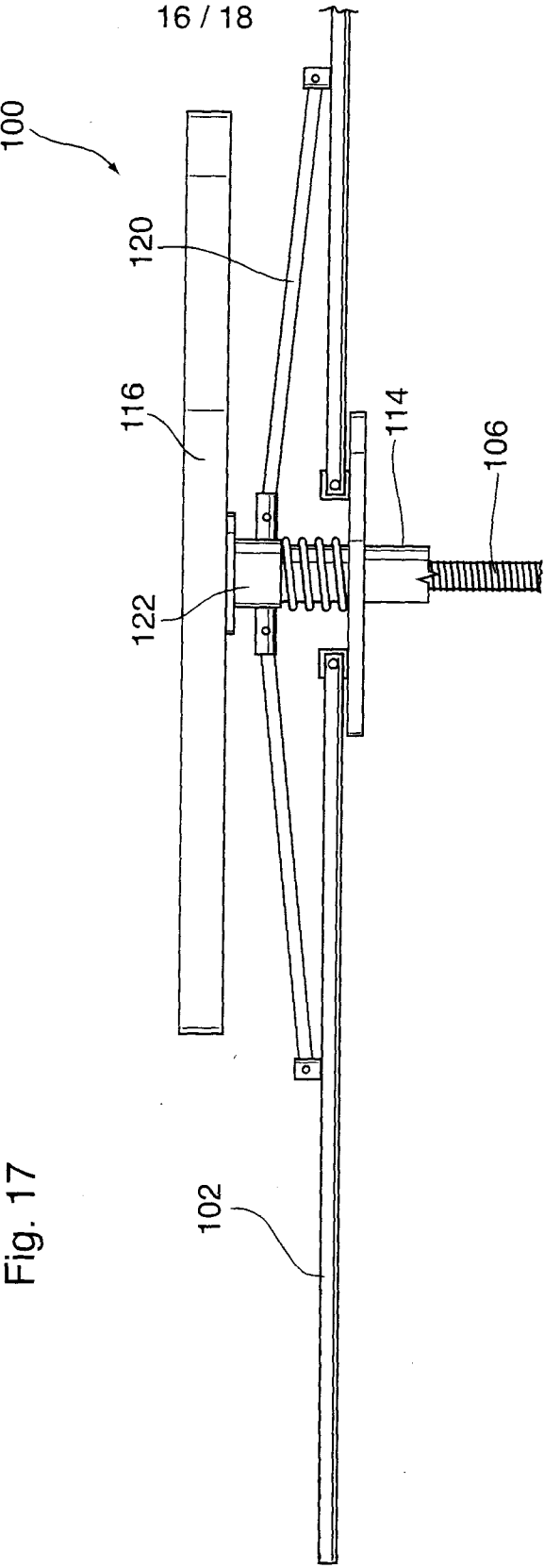


Fig. 17

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Fig. 18

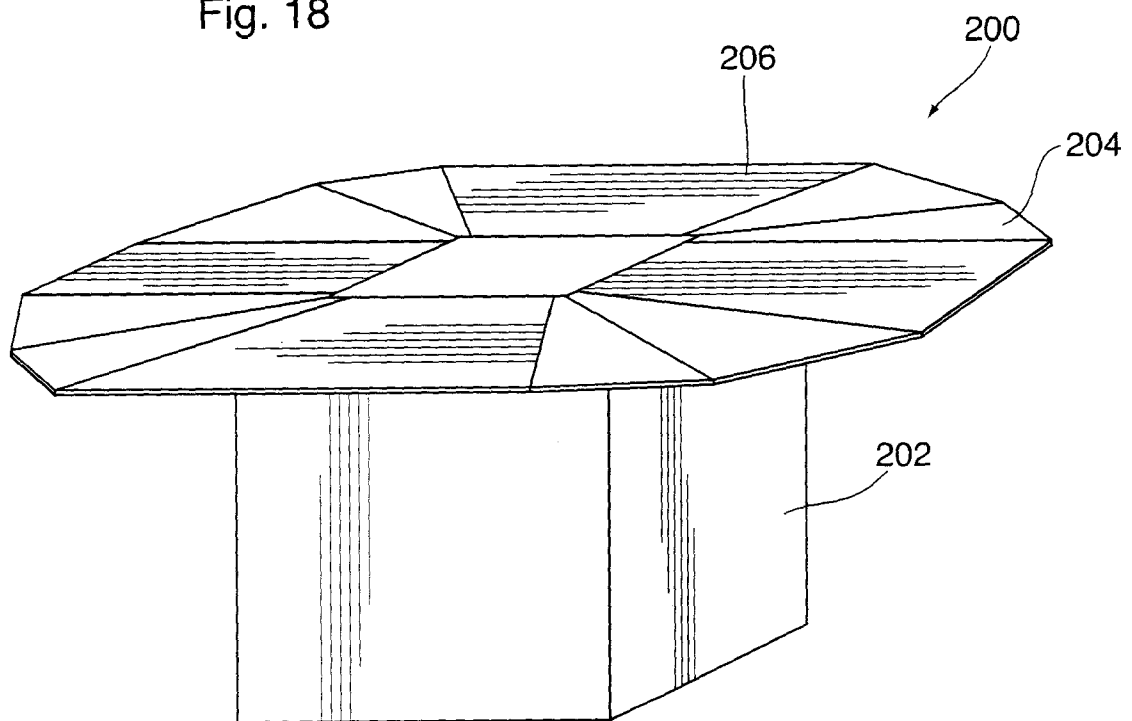
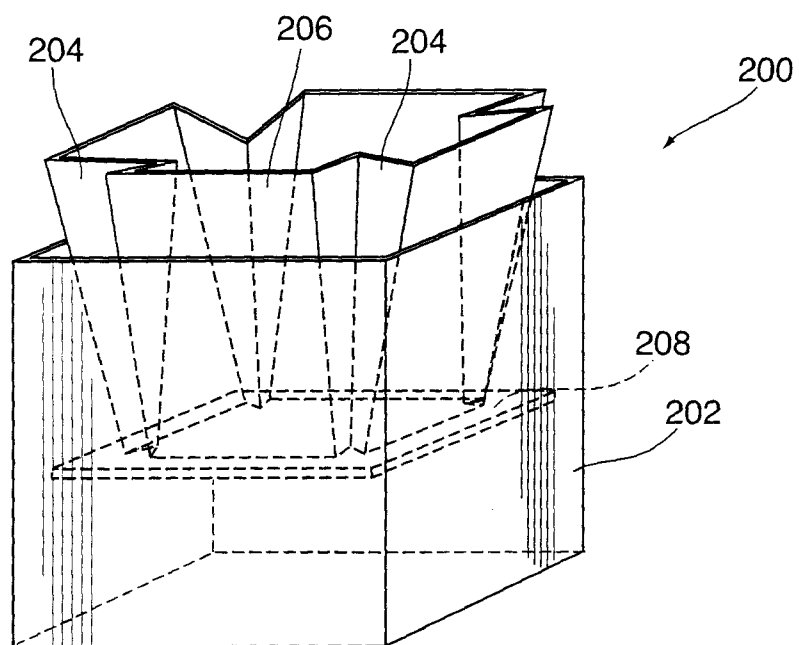


Fig. 19



INTERNATIONAL SEARCH REPORT

International application No.

PCT/CA2013/001045

A. CLASSIFICATION OF SUBJECT MATTER
IPC: **A47B 3/00** (2006.01), **A47B 1/03** (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC: A47B 3/00 (2006.01), A47B 1/03 (2006.01)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)
TotalPatent & Intellect (Canadian Patent Database)
Search terms: folding, table, lifting, plate, hinge, rod, jack, screw

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 8,240,755 B2 (KHIABANI) 14 August 2012 (14-08-2012) *whole document*	1 to 15
A	US 1,277,988 A (MILLER) 3 September 1918 (03-09-1918) *whole document*	1 to 15
A	US 3,073,660 A (SHULTZ) 15 January 1963 (15-01-1963) *whole document*	1 to 15
A	US 2,162,298 A (DAILEY) 13 June 1939 (13-06-1939) *whole document*	1 to 15
A	US 2,560,079 (BLUM) 10 July 1951 (10-07-1951) *whole document*	1 to 15

 Further documents are listed in the continuation of Box C.

 See patent family annex.

* “A” “E” “L” “O” “P”	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance earlier application or patent but published on or after the international filing date document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) document referring to an oral disclosure, use, exhibition or other means document published prior to the international filing date but later than the priority date claimed	“T” “X” “Y” “&”	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art document member of the same patent family
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Date of the actual completion of the international search
16 May 2014 (16-05-2014)

Date of mailing of the international search report
12 June 2014 (12-06-2014)

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Authorized officer

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INTERNATIONAL SEARCH REPORT

Information on patent family members

PCT/CA2013/001045

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
US8240755B2	14 August 2012 (14-08-2012)	US2010001557A1 CA2672392A1	07 January 2010 (07-01-2010) 07 January 2010 (07-01-2010)
US1277988A	03 September 1918 (03-09-1918)	None	
US3073660A	15 January 1963 (15-01-1963)	None	
US2162298A	13 June 1939 (13-06-1939)	None	
US2560079A	10 July 1951 (10-07-1951)	None	