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(54) **Desk board raising apparatus**

(57) A desk board raising apparatus has a seat (10), an active module (20), a passive module (30) and a cylinder (40). The active module (20) is pivotally mounted in the seat (10) and has a base (21), two linking arms (22), and a pivot (23). The pivot (23) is deposited between the linking arms (22) and pivotally mounted in the seat (10). The passive module (30) has a passive board (31) pivotally connected with the linking arms (22). The cylinder (40) is adapted to push the passive board (31). The base (21) lifted up or down can drive the passive board (3)1 to move up or down. The desk board raising apparatus uses a simple structure to synchronize the movements of the passive board (31) and the base (21), and has the advantages of convenient operation, low manufacturing cost and low maintenance cost.

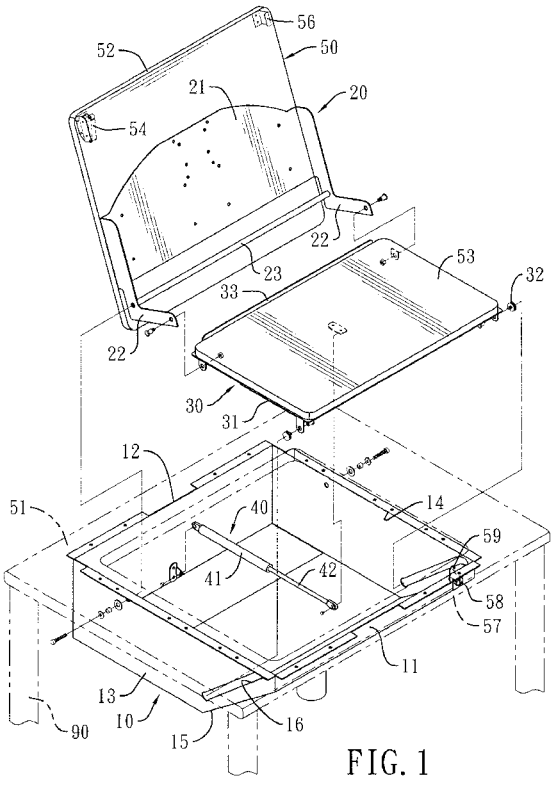

FIG. 1

EP 2 570 048 A2

Description

[0001] This application claims the benefit of the Taiwan patent application No. 100133593, filed on September 19, 2011, the disclosure of which is incorporated herein in its entirety by reference.

1. Field of the Invention

[0002] The invention relates to a desk board raising apparatus, and more particularly to a desk board raising apparatus that has a reduced manufacturing cost.

2. Description of the Prior Art(s)

[0003] A desk has a seat, a desk board, an inner board and a driving device. The desk board is pivoted on a top surface of the seat. The inner board is mounted in the seat under the desk board. The driving device is mounted in the seat and is electrically connected to an outer power supply. The driving device has a lifting shaft and a switch. The lifting shaft is connected to a bottom surface of the inner board. The switch is mounted outside the seat.

[0004] The desk can be applied as a computer desk to support a computer screen, a keyboard and a mouse on the desk. The computer screen is mounted on an inner surface of the desk board. The keyboard and the mouse are supported on the inner board. Mostly, the computer screen, the keyboard and the mouse are held in the seat. When a user wants to use a computer mounted in the desk, the desk board is lifted up to erect the computer screen. Then, the user can turn on the switch of the driving device to push up the lifting shaft of the driving device, and then the inner board is moved upward to enable the user to use the keyboard and the mouse conveniently.

[0005] However, the inner board is not lifted when the desk board is raised and has to be lifted by the driving device individually, so the driving device is necessary for the conventional desk, which causes the increasing of the manufacturing and maintenance costs and power consumption. Moreover, the lifting action of the inner board is not synchronized with the lifting action of the desk board, which reduces the operating convenience.

[0006] To overcome the shortcomings, the present invention provides a desk board raising apparatus to obviate the aforementioned problems.

[0007] The main objective of the invention is to provide a desk board raising apparatus being convenient to operate, reducing the manufacturing costand maintenance cost, and consuming no power.

[0008] The desk board raising apparatus has a seat 10, an active module 20, a passive module 30 and a cylinder 40. The seat 10 has two side boards 13. The side boards 13 are opposite to each other and respectively have a chute 16. The active module 20 is pivotally mounted in the seat 10 and has a base 21, two linking arms 22 and a pivot 23. The linking arms 22 are L-shaped and respectively protrude from two side edges of the base 21. The pivot 23 is deposited between the linking arms 22 and is connected with the side boards 13. The passive module 30 is mounted in the seat 10 and has a passive board 31 deposited between the side boards 13. The passive board 31 has a front end to slip along the chutes 16 and has a rear end to connect with the linking arms 22 pivotally. The cylinder 40 is mounted in the seat 10 and has a cylinder body 41 and a cylinder shaft 42. The cylinder body 41 has a front end and a rear end, and the rear end of the cylinder body 41 is mounted in the seat 10. The cylinder shaft 42 is movably mounted on the cylinder body 41 and has a distal end extending out the front end of the cylinder body 41. The distal end of the cylinder shaft 42 is connected with the passive board 31 of the passive module 30 and is adapted to push the passive board 31 of the passive module 30.

[0009] The linking arms 22 of the active module 20 are pivoted with the passive board 31 of the passive module 30, and the front end of the passive board 31 is slidably mounted in the chutes 16. Thus, the base 21 is lifted up or down to rotate the linking arms 22 of the active module 20 for driving the passive board 31 to be moved up or down. Then, the cylinder 40 provides a push force to push the passive board 31up smoothly and to securely hold the passive board 31 in place. Accordingly, the desk board raising apparatus uses simple structure to synchronize the movements of the passive board 31 and the base 21, and has the advantages of convenient operation, low manufacturing cost, low maintenance cost, and no power consumption.

IN THE DRAWINGS:

[0010]

Fig. 1 is an exploded perspective view of a desk board raising apparatus in accordance with the present invention;

Fig. 2 is an operational perspective view of the desk board raising apparatus in Fig. 1 mounted on a desk;

Fig. 3 is a side view in partial section of the desk board raising apparatus in Fig. 2;

Fig. 4 is an operational side view in partial section of the desk board raising apparatus in Fig. 2;

Fig. 5 shows operational partial front views of the desk board raising apparatus in Fig. 2;

Fig. 6 is a front view of the desk board raising apparatus in Fig. 2; and

Fig. 7 is an operational side view in partial section of the desk board raising apparatus in Fig. 2 to deposit a computer screen and a keyboard.

[0011] With reference to Figs. 1 and 2, a desk board raising apparatus in accordance with the present invention comprises a seat 10, an active module 20, a passive module 30, a cylinder 40 and a desk board module 50.

[0012] The seat 10 has a longitudinal axis, a front board 11, a rear board 12, two side boards 13, a chamber, an

opening 14, and an inclined surface 15. The rear board 12 is opposite to the front board 11. The side boards 13 are connected with the front board 11 and the rear board 12. Each side board 13 has a chute 16. The chamber is defined in the seat 10 and is enclosed by the front board 11, the rear board 12 and the side boards 13. The opening 14 is defined in a top surface of the seat 10 and is in communication with the chamber. The inclined surface 15 is defined on a front surface of the front board 11 and inclines to a bottom end of the rear board 12 to provide an active space. Each chute 16 has a locating segment close to a top end of the front board 11. The chutes 16 are symmetrical with respect to the longitudinal axis of the seat 10.

[0013] The active module 20 is pivotally mounted in the seat 10 and has a base 21, two linking arms 22 and a pivot 23. The linking arms 22 are L-shaped and respectively protrude from two side edges of the base 21 and further are symmetrical with respect to the longitudinal axis of the seat 10. The pivot 23 is deposited between the linking arms 22. Two ends of the pivot 23 are respectively connected to the corners of the linking arms 22 and are respectively connected with the side boards 13.

[0014] The passive module 30 is mounted in the seat 10 and has a passive board 31 and two sliders 32. The passive board 31 is deposited between the side boards 13 and has a front end to slip along the chutes 16 and has a rear end pivotally connected with the linking arms 22.The sliders 32 are respectively mounted on two sides of the passive board 31. With reference to Figs. 3 and 4, each slider 32 is slidably mounted in a corresponding one of the chutes 16.

[0015] The cylinder 40 is mounted in the seat 10 and has a cylinder body 41 and a cylinder shaft 42. The cylinder body 41 has a front end and a rear end. The rear end of the cylinder body 41 is mounted on the rear board 12 of the seat 10. The cylinder shaft 42 is movably mounted on the cylinder body 41 and has a distal end. The distal end of the cylinder shaft 42 extends out of the front end of the cylinder body 41 and is connected with the passive board 31 of the passive module 30 and is adapted to push the passive board 31 of the passive module 30.

[0016] The desk board module 50 has an outer board 51, a raising board 52, and an inner board 53. The outer board 51 is hollow and is mounted on the top surface of the seat 10 around the opening 14 of the seat 10. The raising board 52 is mounted on the base 21 of the active module 20. The inner board 53 is mounted on the passive board 31 of the passive module 30. The passive board 31 has a wall 33 extending above a top surface of the inner board 53. The wall 33 is located at a position adjacent to a pivotal location of the passive board 31 and the linking arms 22. The raising board 52 has a cavity defined in the raising board at a position adjacent to the front board 11 to enable the raising board 52 to be convenient in lifting

[0017] With reference to Fig. 6, the desk board module 50 further has a pressing locker 54 mounted on a bottom surface of the raising board 52. The seat 10 further has a positioning member 55 mounted on the front board 11 and selectively engaging the pressing locker 54. With reference to Fig. 5, the board raising apparatus has a locking board 56 and a lock 57. The locking board 56 is bent and is mounted on the bottom surface of the raising board 52. The lock 57 is rotatably mounted on the front board 11 and has a locking hole 58 and a locking hook 59 to selectively engage the locking board 56.

[0018] With reference to Fig. 6, the desk board raising apparatus has a screen bracket 60 mounted on the base 21 of the active module 20. The screen bracket 60 has multiple hanging holes 61.

[0019] With reference to Figs. 1 to 2, the desk board raising apparatus has multiple legs 90 mounted on a bottom surface of the outer board 51. With reference to Fig. 3, in a preferred operating mode, the raising board 52 can be slightly pressed to disengage the pressing locker 54 on the raising board 52 from the positioning member 55 on the seat 10, and then the pressing locker 54 provides a push force to the raising board 52. Thus, the raising board 52 is slightly moved up to enable a user to conveniently lift the raising board 52 with fingers pressing into the cavity. The active module 20 is rotated with the raising board 52, and the passive board 31 of the passive module 30 is moved by the linking arms 22 of the active module 20. The passive board 31 is moved along the chutes 16 of the side boards 13. Then, a top surface of the inner board 53 and a top surface of the outer board 51 are located on the same horizontal plane.

[0020] With reference to Fig. 4, the raising board 52 can be pressed down, and then the base 21 of the active module 20 and the linking arms 22 are rotated downward together. Thus, the linking arms 22 pull the passive board 31 to move down and slip along the chutes 16. The passive board 31 and the inner board 53 are stored in the chamber of the seat 10. When the opening 14 of the seat 10 is closed by the raising board 52, the positioning member 55 in the seat 10 steadily engages the pressing locker 54 on the raising board 52 to fix the raising board 52 in position. Then, the inner board 53 is hidden under the raising board 52.

[0021] With reference to Fig. 5, a key can be inserted into the locking hole 58 of the lock 57, and then the locking hook 59 is rotated by the key and clasps the locking board 56 to fix the raising board 52 on the seat 10.

[0022] With reference to Fig. 7, a computer screen 70, a keyboard 80 and a mouse can be deposited in the desk board raising apparatus. A hanger 71 is mounted on a rear surface of the computer screen 70 to clasp the screen bracket 60 and fix the computer screen 70 on the screen bracket 60. Alternatively, the computer screen 70 is fixed on the base 21 or the raising board 52 by a shrunk band. The keyboard 80 and the mouse can be put on the inner board 53, and the wall 33 of the passive board 31 prevents the keyboard 80 and the mouse from falling.

[0023] When the raising board 52 is pressed down and the opening 14 is closed, the computer screen 70, the

keyboard 80 and the mouse are stored in the seat 10. When the raising board 52 is raised, the keyboard 80 and the mouse are exposed to be used. In addition, the inclined surface 15 can provide an extra legroom to prevent the interference between the legs of the users and the seat 10.

[0024] The active module 20 drives the passive module 30 to be moved by the linking arms 22. The motion path of the passive board 31 of the passive module 30 is restricted by the chutes 16. The raising board 52 is lifted up with the opening 14 open to drive the passive board 31 and the inner board 53 to move up, and the raising board 52 is pressed down with the opening 14 closed to drive the passive board 31 and the inner board 53 to move down. The cylinder 40 provides a push force to push the passive board 31 up smoothly and to securely hold the passive board in place. Accordingly, the desk board raising apparatus uses a simple structure to synchronize the passive board 31 and the base 21 and has the advantages of convenient operation, low manufacturing cost, low maintenance cost, and consuming no power. Furthermore, the engagement between the pressing locker54 and the positioning member 55 can increase the convenience in operation of the desk board raising apparatus.

Claims

1. A desk board raising apparatus **characterized in that**:

a seat (10) having:

two side boards (13) opposite to each other and respectively having a chute (16);

an active module (20) pivotally mounted in the seat (10) and having:

a base (21);
two linking arms (22) being L-shaped and respectively protruding from two side edges of the base (21); and
a pivot (23) deposited between the linking arms (22) and connected with the side boards (13);

a passive module (30) is mounted in the seat (10) and having:

a passive board (31) deposited between the side boards (13) and having a front end to slip along the chutes (16) and having a rear end to be pivotally connected with the linking arms (22); and

a cylinder (40) is mounted in the seat (10) and having:

a cylinder body (41) having a front end and a rear end, the rear end of the cylinder body (41) mounted in the seat (10); and
a cylinder shaft (42) movably mounted on the cylinder body (41) and having:

a distal end extending out of the front end of the cylinder body (41) and connected with the passive board (31) of the passive module (30), and adapted to push the passive board (31) of the passive module (30).

2. The desk board raising apparatus as claimed in claim 1, wherein
the seat (10) has:

a front board (11) connected with the side boards (13);
a rear board (12) opposite to the front board (11) and connected with the side boards (13);
a chamber defined in the seat (10) and enclosed by the front board (11), the rear board (12), and the side boards (13);
an opening (14) defined in a top surface of the seat (10) and in communication with the chamber; and
an inclined surface (15) defined on a front surface of the front board (11).

3. The desk board raising apparatus as claimed in claim 2, wherein
the desk board raising apparatus has:

a desk board module (50) having:

an outer board (51) mounted on the top surface of the seat around the opening of the seat (10);
a raising board (52) mounted on the base (21) of the active module (20); and
an inner board (53) mounted on the passive board (31) of the passive module (30); and

the passive board (31) has a wall extending above a top surface of the inner board (53).

4. The desk board raising apparatus as claimed in claim 3, wherein
the desk board module (50) has a pressing locker (54) mounted on a bottom surface of the raising board (52); and
the seat (10) has a positioning member (55) mounted on the front board (11) and selectively engaging the pressing locker (54).

5. The desk board raising apparatus as claimed in claim 4, wherein
the board raising apparatus (50) has
a locking board (56) being bent and mounted on the bottom surface of the raising board (52); and
a lock (57) rotatably mounted on the front board (11) and having:

a locking hole (58); and
a locking hook (59) selectively engaging the locking board (56).

6. The desk board raising apparatus as claimed in any one of claims 1 to 5,
wherein the passive module (30) has two sliders (32), and the sliders (32) are respectively mounted on two sides of the passive board (31), each slider (32) slidably mounted in a corresponding one of the chutes (16).

7. The desk board raising apparatus as claimed in any one of claims 1 to 5,
wherein the desk board raising apparatus has a screen bracket (60) mounted on the base (21) of the active module (20).

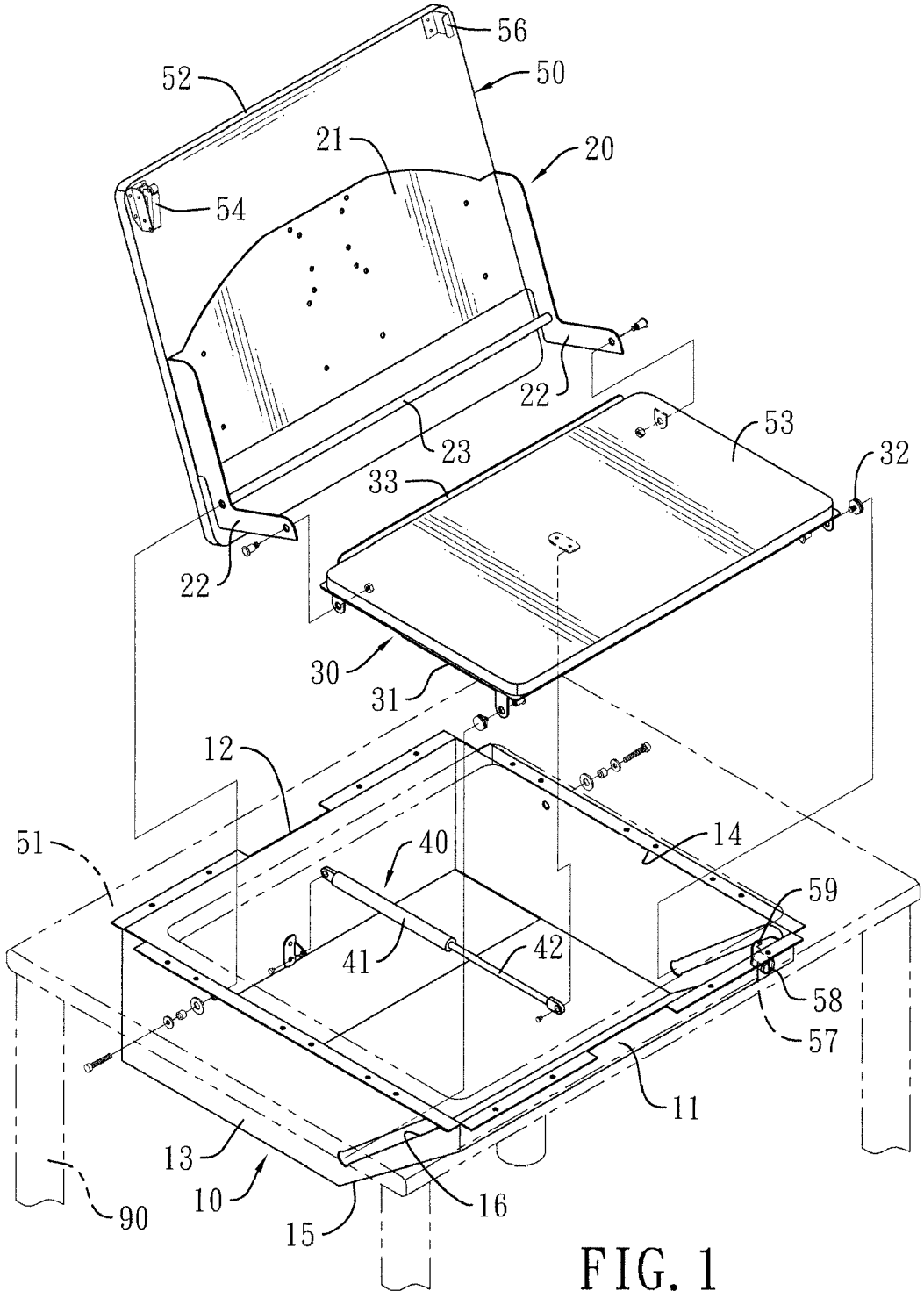
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FIG. 1

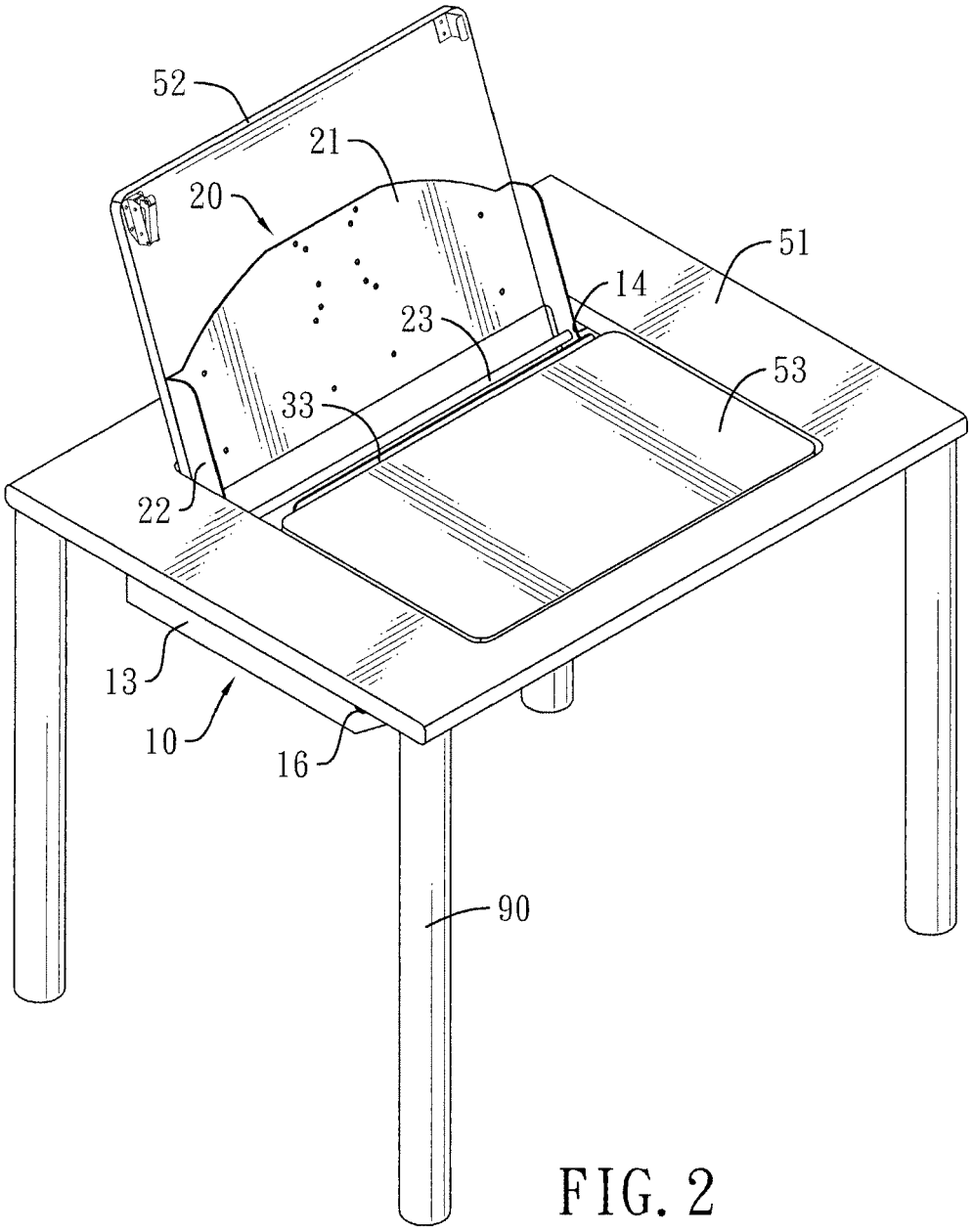

FIG. 2

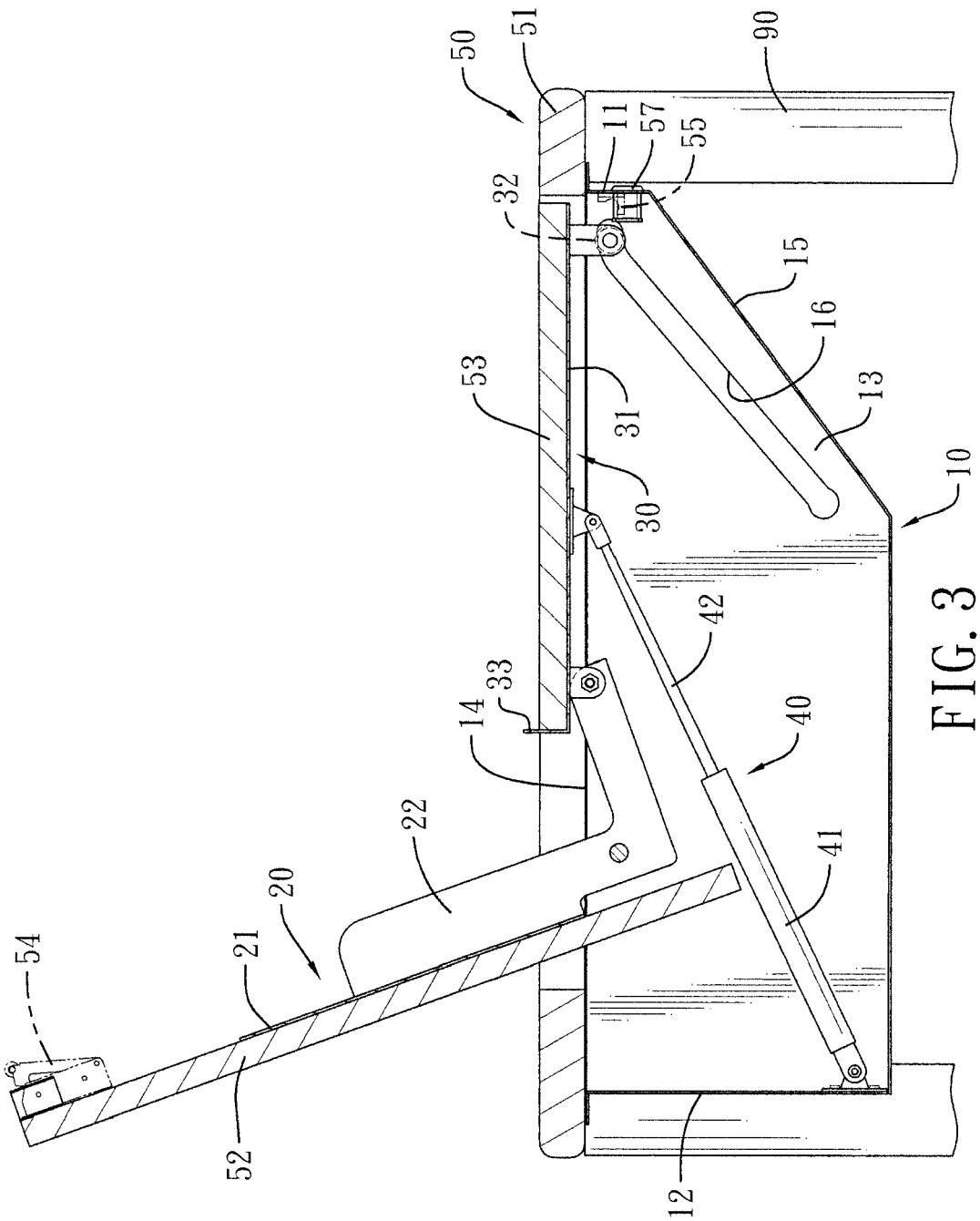
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FIG. 3

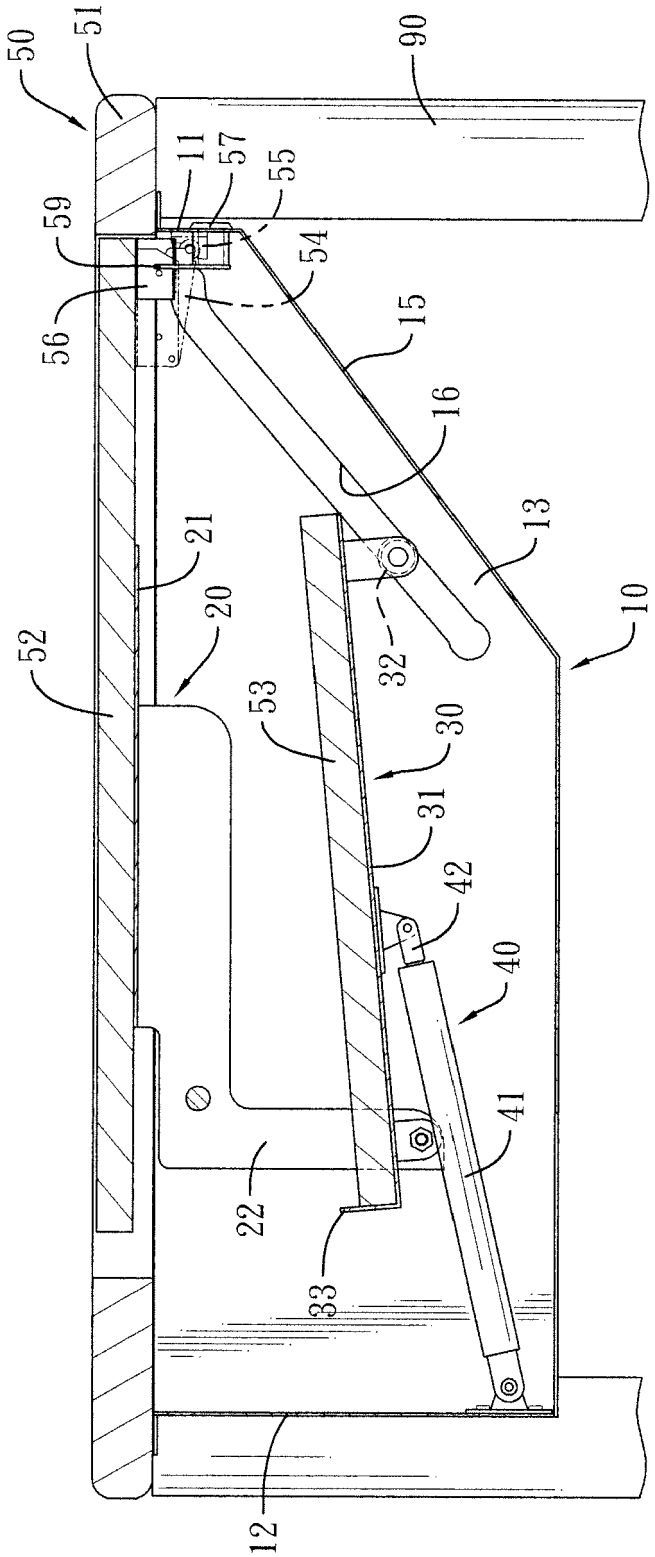
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FIG. 4

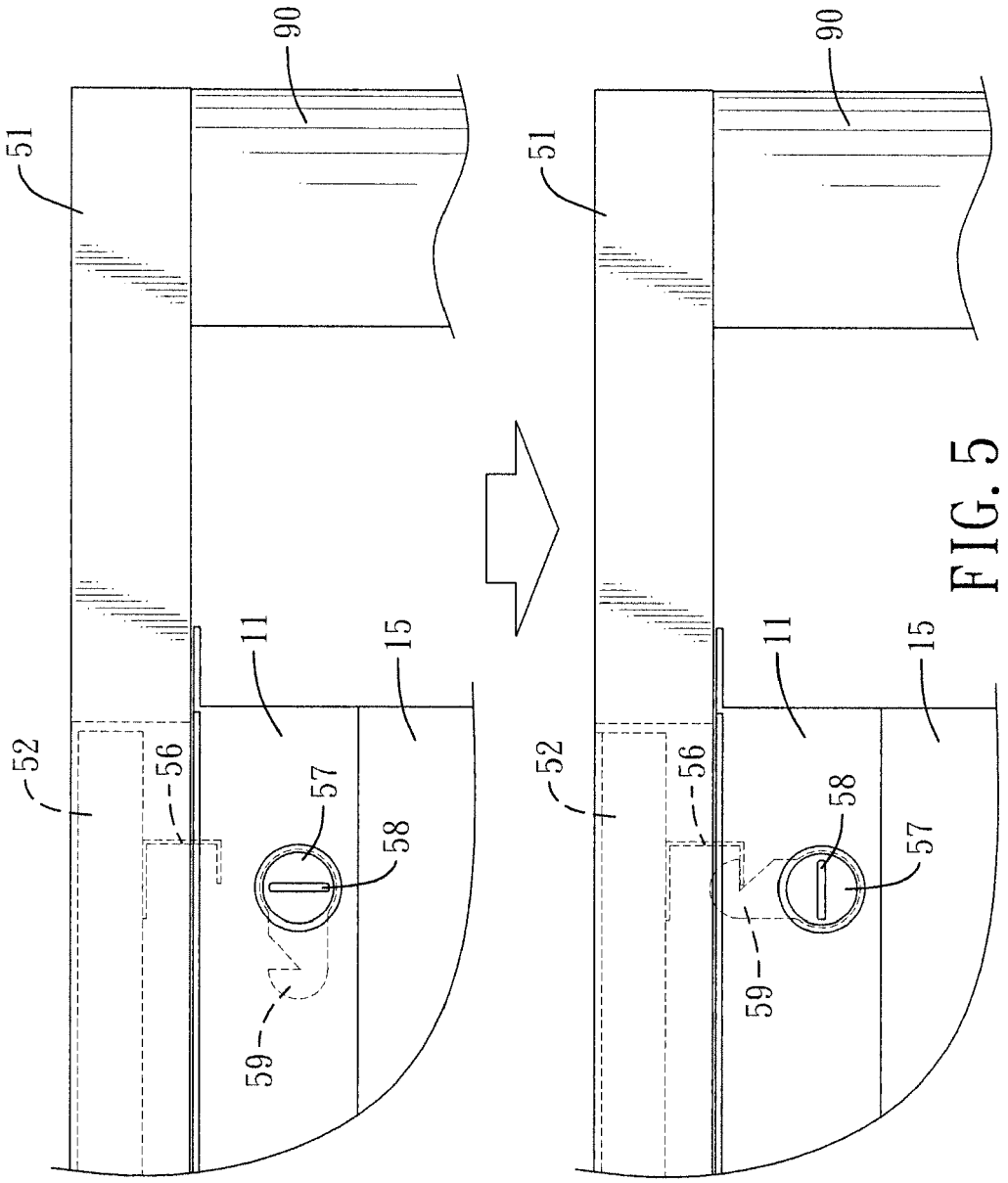

FIG. 5

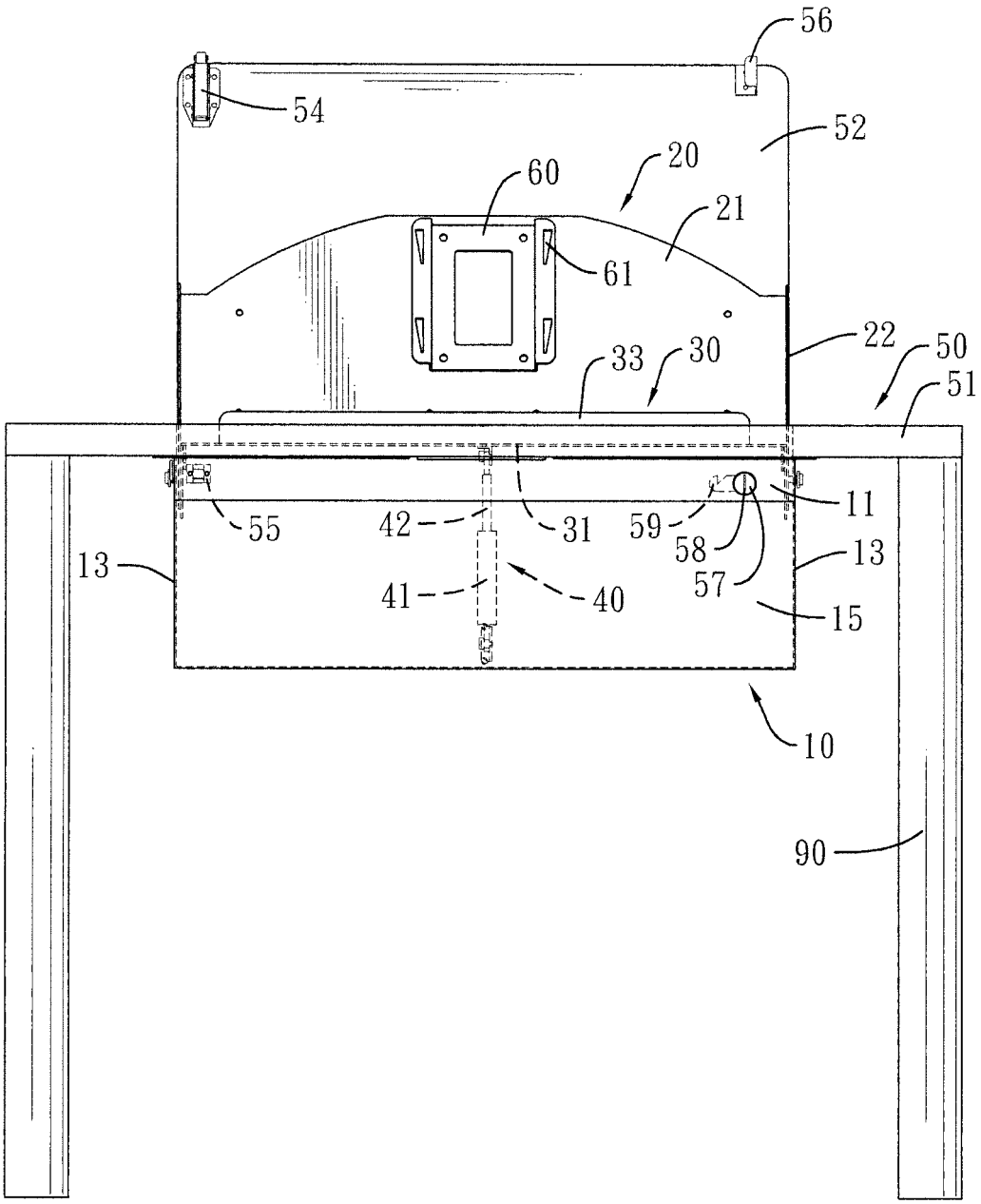
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FIG. 6

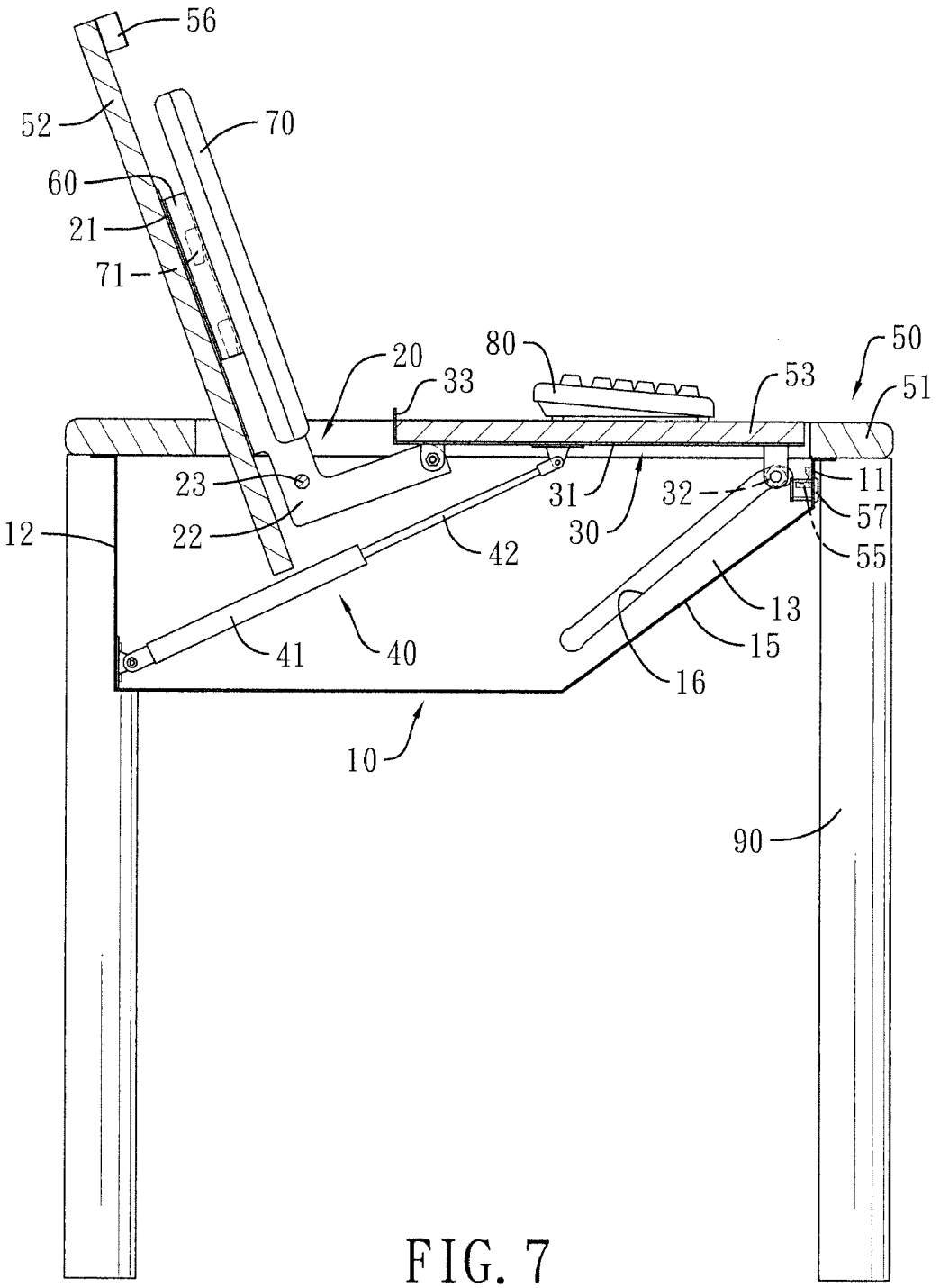
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FIG. 7

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- TW 100133593 **[0001]**