

PATENT SPECIFICATION

(11)

1 583 897

1 583 897

- (21) Application No. 27278/77 (22) Filed 29 June 1977
(31) Convention Application No. 6480/76 (32) Filed 30 June 1976 in
(33) Australia (AU)
(44) Complete Specification published 4 Feb. 1981
(51) INT. CL.³ A47B 41/00
E05D 5/14
(52) Index at acceptance
A4H 11Y 17B 17D1 1A2 1S2 21 27B 6A
E2F 605 656 AD EB

(19)



(54) IMPROVEMENTS IN DESKS

(71) We, SEBEL LIMITED, a company incorporated under the laws of the State of New South Wales, of 96 Canterbury Road, Bankstown, New South Wales 2200, Australia, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to desks. While the invention has particular application to school desks, to which the detailed description to follow will be directed, it also has application to other types of desks.

School desks are commonly of two types. One type has a writing surface in the form of a hinged lid, hinged toward its rear, by which access can be obtained to a compartment for holding books, stationery, etc. These desks are usually made from wood, and as a consequence the lids are heavy. The hinges are such that the lid can go well past the vertical and away from the desk and the hinges are therefore easily torn off. Taken with the weight of the lid, a student at one desks can be hit on the head by the lid of the desk behind. In addition, on release the lid closes with a loud bang.

The other type of school desk has a fixed writing surface, and a shelf underneath for storing books. This arrangement is inconvenient, a desired book being difficult to identify and extract, with a strong likelihood of one or more books falling to the floor.

At one time it was customary for a class or form to occupy one room, except for specialist subjects such as science requiring specialised equipment, and for teachers to move from class to class. Nowadays it is becoming more and more common for the teachers to stay in a particular classroom and for the students to move from class to class. This latter practice requires students to carry books, etc., from class to class, and in some schools moulded plastics boxes have been provided which hold the books and which can be carried from room to

room.

One object of this invention is to provide a desk having a hinged lid and a removable container in which books or the like can be stored and moved from place to place. Preferably, the lid is lightweight and its opening movement is limited.

According to one aspect of the present invention there is disclosed a desk comprising a frame having legs supporting a substantially rectangular portion of the frame; a lid hingedly connected to one side of the frame portion; and a box having a base and four walls, at least two of the walls each having a flange extending outwardly from the top thereof, the box being removably insertable within the frame portion and being supported by engagement of each outwardly extending flange with an adjacent side of the frame portion, and said lid being pivotable between a lowered, box-closed position in which said lid covers said box to provide a working surface and a raised, box-open position.

Preferably the lid and box are moulded from light weight but strong plastics materials.

Two embodiments of the desk of the present invention will now be described with reference to the drawings in which;

Fig. 1 is a perspective view of the desk of the preferred embodiment;

Fig. 2 is a perspective view of the upper part of the frame of the desks which is obscured in Fig. 1;

Fig. 3 is a cross-section of the desk of Fig. 1 taken along the line III-III of Fig. 1;

Fig. 4 is an enlarged detailed view of a portion of Fig. 3;

cause the dimensions of the box 2 are slightly less than those of the frame portion 12, the box 2 does not reach the rear side 13 of the desk. There are two openings (not shown) between the skirt 18 and the lip 17 which permit the frame portion 12 to pass from underneath the lip 17 to the exterior of the skirt 18.

The lid 3 comprises a flat top 20 and a peripheral downwardly extending rim 21

Fig. 5 is a plan view of the hinge of the preferred embodiment;

Fig. 6 is a cross-sectional view taken along the line VI-VI of Fig. 5;

5 Fig. 7 is an underside view of the hinge of Fig. 5 and

Fig. 8 is a perspective schematic view of the frame of a desk of a second embodiment.

10 Referring now to Figs. 1 to 3 the desk of the preferred embodiment comprises a frame 1, an open-topped box 2 which is removably insertable within the frame 1, and a lid 3 which is hingedly connected by

15 means of two hinges 4 to the frame 1.

The frame 1 of the preferred embodiment is formed from two mirror-image portions 5 and 6 which are joined together, preferably by welding. Each of the mirror-image portions 5 and 6 comprise a pair of substantially parallel spaced apart feet 7 from which two legs 8 extend upwardly. The ends of the legs 8 are joined by substantially horizontal U-shaped members 9 which

25 complete the mirror-image portions. The frame 1 is preferably formed from metal tubing which has been bent to the required shape and the two mirror-image portions 5 and 6 abut each other along the length of the legs 8. Preferably a small bracing member 10 is provided at the bottom of each pair of abutting legs 8 in order to increase the rigidity of the frame 1. In addition, small rubber or plastics ends 11

35 are provided for each of the feet 7. As can best be seen in Fig. 2, the two U-shaped members 9 together constitute a substantially horizontal and substantially rectangular frame portion 12 which has four sides and which receives the open-topped box 2. One (rear) side 13 of the frame portion 12 receives the hinges 4 and the lid 3 therefore pivots about the rear side 13.

45 The open-topped box 2 comprises a base 15 and four walls 16. Three of the walls 16 have a continuous L-shaped lip 17 extending from the upper edge thereof so as to form a downwardly opening channel which is dimensioned to receive the metal tubing which constitutes the frame portion 12. As seen in Figs. 3 and 4 the remaining wall 16 of the box 2 includes a strengthening skirt 18 at its upper edge which is not,

55 however, dimensioned to receive the metal tubing which constitutes the frame portion 12.

The box 2 is removably insertable within the frame 1 by passing the base 15 through the frame portion 12 and engaging the lip 17 and its associated channel with the three respective adjacent sides of the frame portion 12, that is the three sides other than the rear side 13. In this way the box 2 is

65 firmly located within the frame 1 but be-

which surrounds the top 20. A gutter 22 (Fig. 4) is provided in the top 20 of the lid 3 to enable students to place pencils and pens in the gutter 22 and hold same in position ready for use. The lid 3 is hinged 70 to the rear side 13 by means of two spaced hinges 4 and is movable between a raised, box-open position, as seen in Fig. 1, and a lowered, box-closed position in which the top 20 provides a substantially level writing 75 surface and the rim 21 surrounds the lip 17.

The preferred embodiment of the hinge 4 is illustrated in Figs. 5 to 7 and Fig. 4 and comprises a tube 25 having a longi- 80 tudinally extending opening or slot 26 therein. The hinge 4 is formed from resilient material and is preferably moulded from resilient plastics material.

A tongue 27 extends to one side of 85 the tube 25 and is bounded on either side by two small gussets 28. Running longitudinally along the upper outer surface of the tube 25 is a ridge 29. The upper surface of the ridge 29, gussets 28 and tongue 27 90 form a substantially flat surface 30 which abuts the inner surface of the top 20 of the lid 3 as will be explained hereinafter.

To the other side of the tube 25 extends a triangular ear or flange 33. A tapped 95 aperture 34 in the ear 33 permits a fastening element such as a threaded fastener or screw 38 (Fig. 4) to pass through the ear 33 and into a cavity 35 formed between two webs 36 which connect the triangular 100 ear 33 to the tube 25. As best seen in Fig. 6 the webs 36 have a sloping upper surface 37.

The interengagement of the rear side 13, the hinge 4 and the lid 3 is best seen in 105 Fig. 4. A part in the form of an ear 40 having an aperture therein extends from the underside of the top 20 of the lid 3. The tongue 27 is passed through the aperture in the ear 40 and the hinge 4 is moved 110 against the lid 3 so as to bring the upper surface 30 of the ridge 29 and gussets 28 against the inner surface of the top 20. Simultaneously the cavity 35 passes over a threaded boss 41 extending from the under- 115 side of the lid 3 in the vicinity of the gutter 22. The sloping surface 37 of the webs 36 accommodates the underside of the gutter 22. The threaded fastener 38 passes through the tapped aperture 34 and 120 threadedly engages the threaded boss 41 so as to secure the hinge 4 against the lid 3.

With both hinges 4 secured to the lid 3 in the positions illustrated in Fig. 1, the 125 openings 26 in the hinges 4 are placed on the rearside 13 of the frame portion 12. Then the lid 3 and hinges 4 are pushed downwardly onto the rear side 13 thereby causing the tube 25 to resiliently deform 130

and pass onto the cylindrical rear side 13. The resilient nature of the hinge 4 enables the tube 25 to snap onto the rear side 13 and thereby retains the hinge 4 on the rear side 13. The cylindrical outer surface of the metal tubing forming the rear side 13 and the cylindrical inner surface of the tube 25 provide a good bearing surface which enables the lid 3 to be pivoted relative to the remainder of the desk.

As best seen in Fig. 4 continued movement of the lid 3 in the raised position beyond the vertical brings the rim 21 near the gutter 22 of the lid 3 into contact with the wall of the box 2 carrying the skirt 18. In this way the movement of the lid 3 is limited beyond a predetermined degree of opening without putting any substantial strain on the hinging mechanism for the lid. Even if the lid 3 is strongly raised beyond this predetermined degree of opening, the resilient tubes 25 expand permitting the lid 3 to come away from the desk 1. Then the lid 3 may be reinstalled by placing the hinges 4 on the rear side 13 again. This represents a considerable advance on prior art desks in which the lids were liable to be torn off at their hinges because of excessive opening and the excessive weight of the lid.

A second embodiment of the desk of the present invention having box 2 and lid 3 as described above but an alternative frame 45, as illustrated in Fig. 8, will now be described. The frame 45 comprises two spaced parallel inverted U-shaped members 46 which are formed from tubular metal. Each U-shaped member 46 comprises two legs 47 separated by rods 48 and 49. The rods 48 and 49 are themselves separated by means of transverse bars 50 whilst the legs 47 are braced by means of struts 51. The bars 50 and struts 51 increase the rigidity of the frame 45 whilst the rods 48 and 49 and the bars 50 together comprise a substantially horizontal and substantially rectangular frame portion similar to frame portion 12 of Fig. 2.

Preferably the legs 47 are telescopically extendible by means of extensions 52 which are slidably mounted interior of the legs 47 and are releasably securable in a number of different positions so as to enable the height of the rods 48 and 49 above floor level to be adjusted. A plastics or rubber end 53 is pushed onto the lower end of each extension 52 in order to provide for non slip engagement between the frame 45 and the floor.

In order to assemble the desk using the frame 45 of Fig. 8, the box 2 is inserted within the frame portion formed by rods 48 and 49 and bars 50. In this embodiment the lip 17 of the box 2 engages bars 50 and rod 49 thereby leaving rod 48 free.

The assembled lid 3 and hinges 4 are then brought into position above the rod 48 and the hinges 4 snapped onto the rod 48. Therefore the lid 3 is able to pivot about the rod 48 between the raised and lowered lid positions.

One advantage of the present invention is that the box 2 of the desks is removable. Therefore the desks may be used without the boxes 2 if a low cost desk is required. In addition the boxes 2 may be allocated to individual students who carry them from classroom to classroom and thereby use the boxes as a container for their books. Finally the boxes may be left in position within the desk frame and the desks used in the conventional manner. In consequence a single style of desk can provide one educational institution with a very flexible piece of equipment.

The foregoing describes only some embodiments of the present invention and modifications, obvious to those skilled in the art, may be made thereto without departing from the scope of the present invention as defined in the appended claims.

WHAT WE CLAIM IS:—

1. A desk comprising a frame having legs supporting a substantially rectangular portion of the frame; a lid hingedly connected to one side of the frame portion; and a box having a base and four walls, at least two of the walls each having a flange extending outwardly from the top thereof, the box being removably insertable within the frame portion and being supported by engagement of each outwardly extending flange with an adjacent side of the frame portion, and said lid being pivotable between a lowered, box-closed position in which said lid covers said box to provide a working surface and a raised, box-open position.

2. A desk as claimed in claim 1 wherein at least the rectangular frame portion of said frame is formed from cylindrical metal tubing, and the hinge connection comprises a snap-on, snap-off hinge formed from a tube of resilient synthetic plastics material having a substantially cylindrical inner surface and a slot extending longitudinally between the ends of the tube, said tube being resiliently deformable to permit said slot to be passed over said one side of the frame portion to releasably secure the tube to said one side, and said tube being secured to said lid whereby continued box opening rotation of said lid beyond said raised, box-open position causes resilient deformation of the tube to release said hinge from said frame portion.

3. A desk as claimed in claim 2 wherein the hinge is secured to the lid by means of a tongue extending away from one side portion of the tube for insertion in an



and pass onto the cylindrical rear side 13. The resilient nature of the hinge 4 enables the tube 25 to snap onto the rear side 13 and thereby retains the hinge 4 on the rear side 13. The cylindrical outer surface of the metal tubing forming the rear side 13 and the cylindrical inner surface of the tube 25 provide a good bearing surface which enables the lid 3 to be pivoted relative to the remainder of the desk.

As best seen in Fig. 4 continued movement of the lid 3 in the raised position beyond the vertical brings the rim 21 near the gutter 22 of the lid 3 into contact with the wall of the box 2 carrying the skirt 18. In this way the movement of the lid 3 is limited beyond a predetermined degree of opening without putting any substantial strain on the hinging mechanism for the lid. Even if the lid 3 is strongly raised beyond this predetermined degree of opening, the resilient tubes 25 expand permitting the lid 3 to come away from the desk 1. Then the lid 3 may be reinstalled by placing the hinges 4 on the rear side 13 again. This represents a considerable advance on prior art desks in which the lids were liable to be torn off at their hinges because of excessive opening and the excessive weight of the lid.

A second embodiment of the desk of the present invention having box 2 and lid 3 as described above but an alternative frame 45, as illustrated in Fig. 8, will now be described. The frame 45 comprises two spaced parallel inverted U-shaped members 46 which are formed from tubular metal. Each U-shaped member 46 comprises two legs 47 separated by rods 48 and 49. The rods 48 and 49 are themselves separated by means of transverse bars 50 whilst the legs 47 are braced by means of struts 51. The bars 50 and struts 51 increase the rigidity of the frame 45 whilst the rods 48 and 49 and the bars 50 together comprise a substantially horizontal and substantially rectangular frame portion similar to frame portion 12 of Fig. 2.

Preferably the legs 47 are telescopically extendible by means of extensions 52 which are slidably mounted interior of the legs 47 and are releasably securable in a number of of different positions so as to enable the height of the rods 48 and 49 above floor level to be adjusted. A plastics or rubber end 53 is pushed onto the lower end of each extension 52 in order to provide for non slip engagement between the frame 45 and the floor.

In order to assemble the desk using the frame 45 of Fig. 8, the box 2 is inserted within the frame portion formed by rods 48 and 49 and bars 50. In this embodiment the lip 17 of the box 2 engages bars 50 and rod 49 thereby leaving rod 48 free.

The assembled lid 3 and hinges 4 are then brought into position above the rod 48 and the hinges 4 snapped onto the rod 48. Therefore the lid 3 is able to pivot about the rod 48 between the raised and lowered lid positions.

One advantage of the present invention is that the box 2 of the desks is removable. Therefore the desks may be used without the boxes 2 if a low cost desk is required. In addition the boxes 2 may be allocated to individual students who carry them from classroom to classroom and thereby use the boxes as a container for their books. Finally the boxes may be left in position within the desk frame and the desks used in the conventional manner. In consequence a single style of desk can provide one educational institution with a very flexible piece of equipment.

The foregoing describes only some embodiments of the present invention and modifications, obvious to those skilled in the art, may be made thereto without departing from the scope of the present invention as defined in the appended claims.

WHAT WE CLAIM IS:—

1. A desk comprising a frame having legs supporting a substantially rectangular portion of the frame; a lid hingedly connected to one side of the frame portion; and a box having a base and four walls, at least two of the walls each having a flange extending outwardly from the top thereof, the box being removably insertable within the frame portion and being supported by engagement of each outwardly extending flange with an adjacent side of the frame portion, and said lid being pivotable between a lowered, box-closed position in which said lid covers said box to provide a working surface and a raised, box-open position.

2. A desk as claimed in claim 1 wherein at least the rectangular frame portion of said frame is formed from cylindrical metal tubing, and the hinge connection comprises a snap-on, snap-off hinge formed from a tube of resilient synthetic plastics material having a substantially cylindrical inner surface and a slot extending longitudinally between the ends of the tube, said tube being resiliently deformable to permit said slot to be passed over said one side of the frame portion to releasably secure the tube to said one side, and said tube being secured to said lid whereby continued box opening rotation of said lid beyond said raised, box-open position causes resilient deformation of the tube to release said hinge from said frame portion.

3. A desk as claimed in claim 2 wherein the hinge is secured to the lid by means of a tongue extending away from one side portion of the tube for insertion in an

(p)

4

1 583 897



4

aperture in a corresponding part of the lid; and an ear extending away from the other side of the tube and having an opening permitting passage of a securing bolt there-
5 through to secure the ear to the lid.

4. A desk as claimed in any one of claims 1 to 3 wherein the flange comprises a continuous lip of L-shaped cross-section forming a downwardly opening channel ex-
10 tending around the edge of three of said walls.

5. A desk as claimed in any one of claims 1 to 4 wherein the box and lid are of synthetic plastics material.

15 6. A desk as claimed in any one of claims 1 to 5 wherein the frame comprises two mirror-image portions, each portion comprising two spaced substantially parallel feet, and two legs extending up-
20 wardly, one from each foot; and a U-shaped member forming half of the frame portion joining the upper ends of said legs, the corresponding legs of each mirror-image portion abutting each other along
25 the length thereof.

7. A desk as claimed in any one of claims 1 to 5 wherein the frame comprises

two spaced apart, parallel, in verted U-shaped members each having two legs joined by a rod; and two spaced apart 30 transverse bars connecting respective ends of the rods, whereby the rods and bars comprise the rectangular frame portion.

8. A desk as claimed in claim 7, wherein the length of the legs is telescopically 35 adjustable.

9. A desk as claimed in claim 2, or any of claims 3 to 8 as dependent on claim 2, wherein the hinge connection includes a second hinge constructed and disposed 40 seimilarly to the first-mentioned hinge, and spaced there from along said one side of the frame portion.

10. A desk as claimed in any one of the preceding claims, wherein the frame por- 45 tion is a substantially horizontal frame portion.

11. A desk substantially as hereinbefore described with reference to Figs. 1 to 7 or Figs. 3 to 8 of the drawings. 50

BARON & WARREN,
16, Kensington Square,
London, W.8.
Chartered Patent Agents.