

[54] FOLDING STUDY-TABLE
[75] Inventor: Giancarlo Piretti, Bologna, Italy
[73] Assignee: Anonima Castella s.a.s. di Cesare Castelli & C., Bologna, Italy
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108/25, 115-122; 297/16, 17, 194

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Primary Examiner—Francis K. Zugel
Assistant Examiner—Glenn O. Finch
Attorney—Burton L. Lilling, Henry A. Marzullo, Jr. et al.

[57] ABSTRACT
A foldable study table or the like adapted to collapse into a compact form. The study table includes a table-top plate and first and second U-shaped frames pivotally connected to each other along an axis so that one frame is nested within the other frame when the study table is in a collapsed condition. The table-top plate is pivotally connected to the frames along said axis and same is nested within said frames when the study table is in a collapsed or stored condition so as to provide an overall coplaner configuration to said foldable study-table.

9 Claims, 8 Drawing Figures

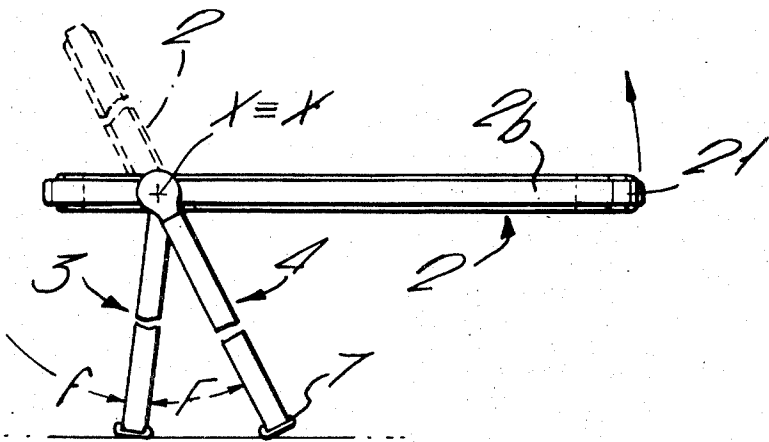


Fig. 1.

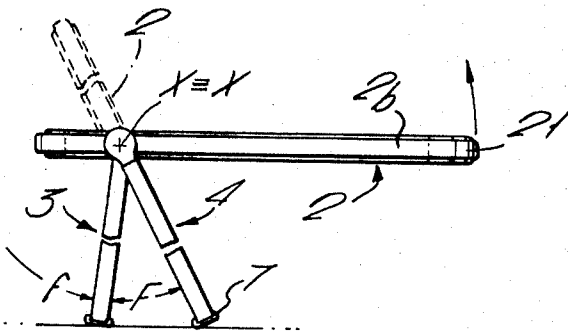
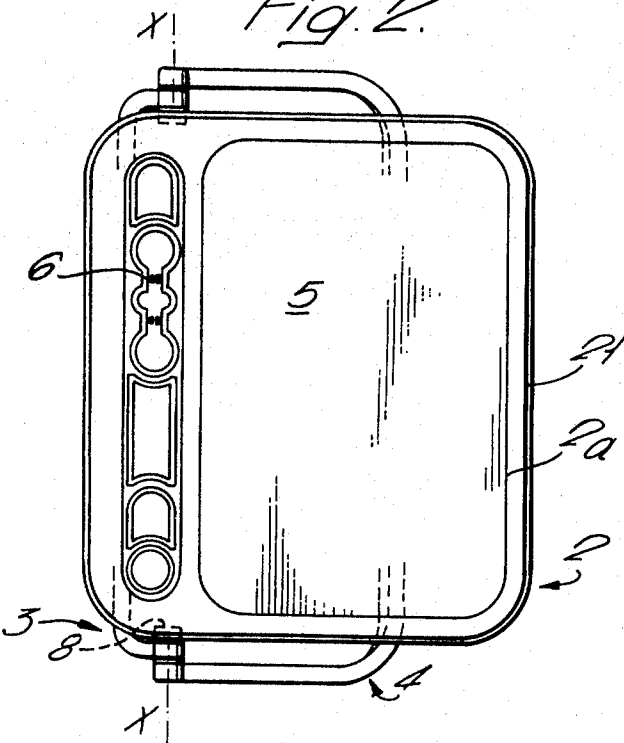
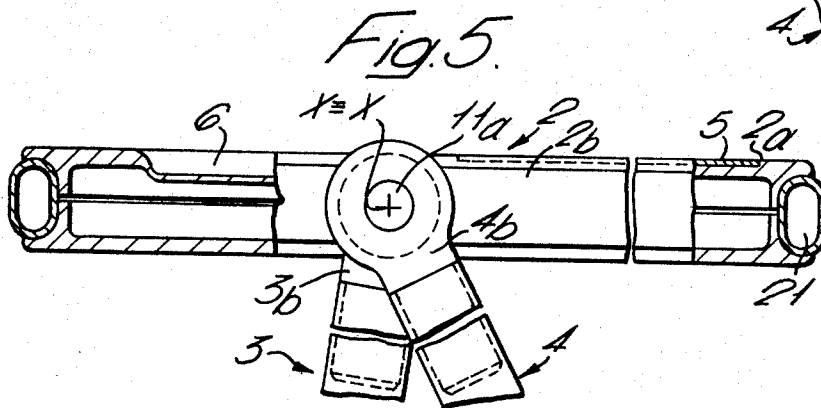
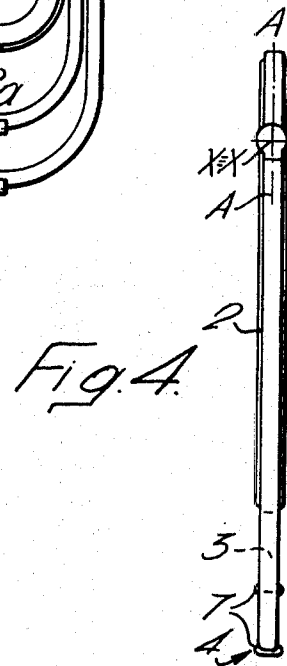
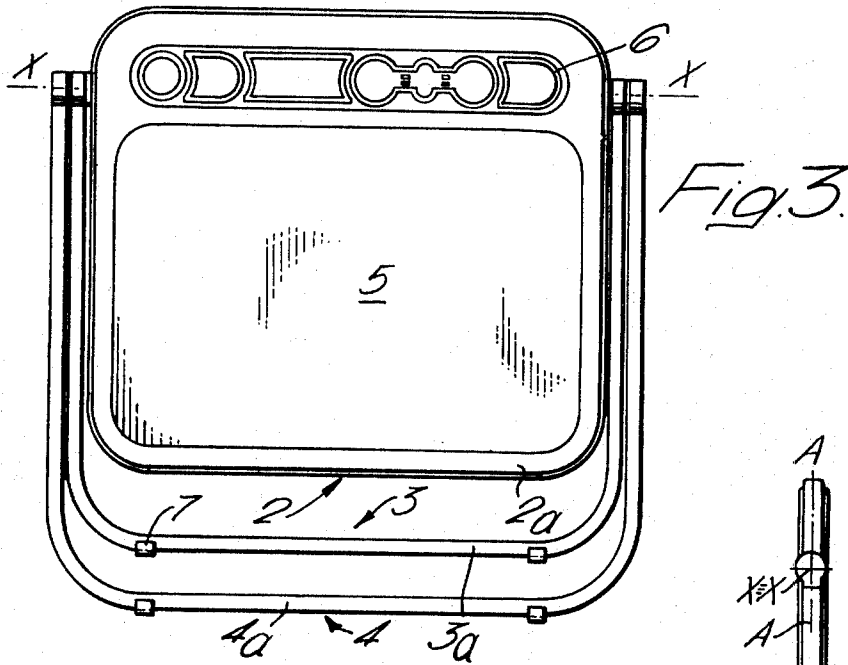
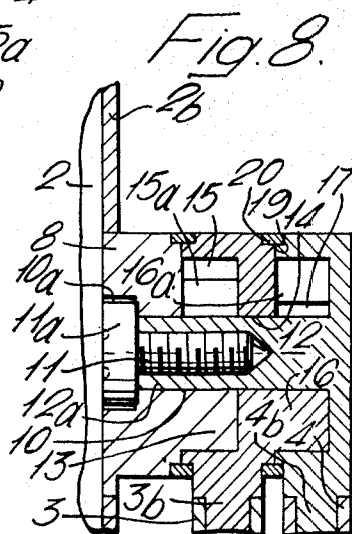
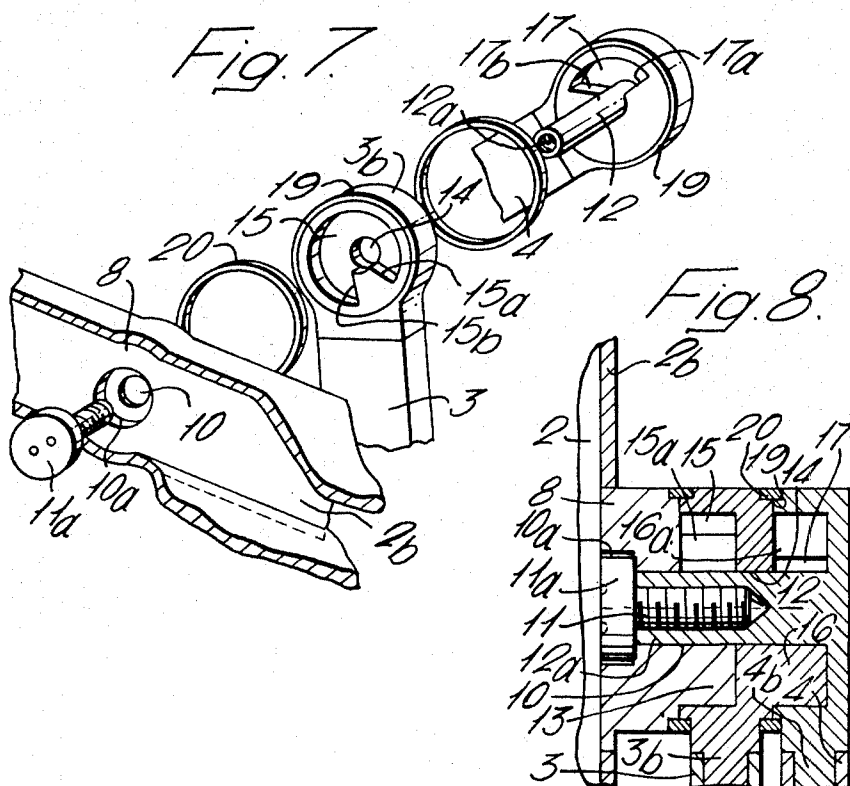
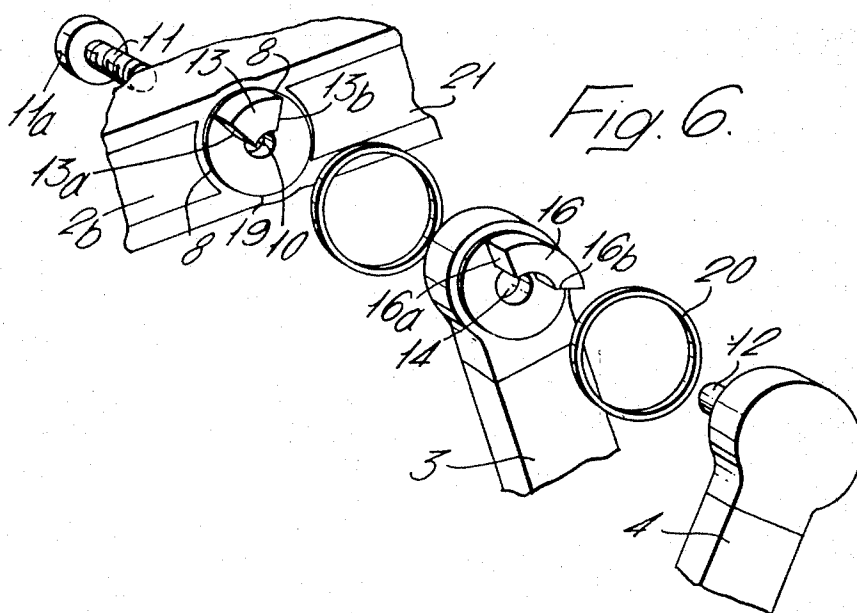


Fig. 2.







FOLDING STUDY-TABLE

The present invention relates to a study-table or desk for children or teen-agers and which can be easily folded to occupy a minimum space and which, can equally easily be brought in its use position without requiring the use of any tool or the locking or releasing of locking means.

The study-table of this invention is substantially constituted of only three components, i.e., a table-top plate and two U-shaped frames forming the legs of the table. Said three components are pivotally connected to each other at intermediate points of the transverse sides of the table-top plate and at the free ends of the U-shaped frames respectively by means of coaxial bushing assemblies, each including guide and limit means provided to limit the rotary movements of said three components with respect to each other, all the aforementioned means being substantially embodied in the said three components forming the structure of the study-table, so that the linkage mechanisms cannot be seen from the outside.

Further said three components of the study-table are so dimensioned and constructed that in the folded position of the said table, one of the U-shaped frames lies within the other U-shaped frame and the table-top plate lies within the former U-shaped frame so that in this position the legs and the table-top become coplanar and the three components occupy a parallelepiped space of a height substantially equal to the thickness of the table-top plate and of such length and width which are slightly greater than those of the said table-top. Thus in this folded position the studytable can be easily transported or stored or it also can be sent, packed into a common cardboard box or other suitable container.

The invention will hereinafter be particularly described by way of example, with reference to the accompanying drawings, in which:

FIGS. 1 and 2 show a side view and a top view respectively of the table in its use position;

FIGS. 3 and 4 show a front view and a side view respectively of the table in its folded flat position;

FIG. 5 is a detail of FIG. 1 in enlarged scale and with the table-top partially sectioned;

FIGS. 6 and 7 are exploded perspective views, viewed from opposite directions, of the bushing assembly at one of the sides of the study-table and of the portions of the legs and of the table-top plate, where the elements of the bushing assembly are arranged;

FIG. 8 is an axial section through the bushing assembly of FIGS. 6 and 7, taken on the line A—A of FIG. 4.

Now referring to the drawings, the main components of the study-table or desk of the invention are generally marked 2, 3 and 4. The component 2 is constituted of a plate, preferably made of plastics or other suitable moulding material. At the front portion of the upper surface of said plate 2 a wide slightly recessed cavity 2a is arranged designed to house a strong sheet 5 of plastic material, opaque and very hard in order to prevent that any funny boy can scratch, cut or engrave the outer surface of the table-top. At the rear part of the plate 2 other various housings 6 are arranged, provided to receive pens, pencils, erasers or india-rubbers, as well as an inkpot or other writing materials. Roundabout the peripheral edge 2a of the plate 2 extending downward a metallic reinforcing band 21 is applied. The compo-

nents 3 and 4 are constituted of metallic tubular U-shaped frames, the frame 3 having such dimensions as to be located within the frame 4, while the plate 2 lies within said frame 3, as the studytable is in its folded position. In their use position the frames 3 and 4 are inclined respectively in opposite directions, forming to one another an angle F, thus constituting the supporting legs of the table-top plate 2. The horizontal lower connecting members 3a and 4a of said U-shaped frames 3 and 4 are provided with small feet 7 or other suitable means, made of a material adapted to prevent the table legs from sliding along the floor and scratching its surface as well as damping out most of the noise generated by any table movement.

At the free ends of the U-shaped frames 3 and 4 and at points of the sides 2b of the peripheral edge 2 of plate 2 which are fairly near the rear side of the table-top are respectively arranged the bushing assemblies, each including guide and limit means. For such a purpose the end portions 3b and 4b of the parallel arms of the U-frames 3 and 4 (see FIGS. 5 to 8) are preferably constituted of inserts, made of a luminium or the like and shaped by a die-casting process. Also in the two sides of the edge 2b of the plate 2 can be respectively built-up an insert 8 made of a luminium by die-casting, which is let into the band 21, and into the edge 2b 3b, 4b and 8, said inserts being thereinbelow described in detail. At X—X is marked the common pivot axis of the bush assemblies, said axis passing through the plate 2 near the zone where the housings 6 are provided. The insert 8 is provided with a central axial hole 10 and a wider hole 10a, opened at the inner side of the edge 2b encircling the lower surface of the table-top plate 2. The hole 10a receives a head 11a of a retaining screw 11 designed to connect the parts of the three components 2, 3 and 4 to each other, and designed to in mutually cooperatively forming each of the bushing assemblies on one of the two sides of the folding study-table. The other of the said bushing assemblies which is located on the opposite side of said folding table, is, of course, symmetrically identical to that located of the aforementioned first side of said table. Thus only one of said bushing assemblies will be hereinafter described and shown in detail in FIGS. 6 to 8. Each free end 4b of the parallel arms of the U-shaped frame 4 is provided with an inwardly extending shaft 12 which is internally screw-threaded at its free end 12a, and into which said retaining screw 11 is engaged, while each end 3b of the U-shaped frame 3 is also provided with an axial through hole 14, enabling said shaft 12 to pass through said end 3b. From the outer surface of each insert 8 along the plate edge 2b extends outwardly a projection 13 (FIGS. 6 and 8) comprising an annular sector, coaxial with the hole 10 and having an angular amplitude of a predetermined value. The projection is housed and slides in a corresponding recess 15, which is a groove in the form of a part of an annulus (FIG. 7) arranged in the part of the free end 3b facing said projection 13. The radial end surfaces 13a and 13b of said projection 13 and those 15a and 15b of the groove 15 constitute in combination two limit means, defining the angular amplitude of the rotation between the components 2 and 3, while concurrently the groove 15 and the projection 13 form a linkage system round the pivot axis X—X in order to allow the table-top 2 to rotate through an angle f from its use position (FIG. 1) up to its folded position (FIG. 4) and vice versa. At the opposite side of the insert 3b

is provided a projection 16 comprising an annular sector, coaxial with the axis X—X and having an angular amplitude of such a value as to allow the frames 3 and 4 to rotate with respect to one another through an angle F so that these components can move from their use position (FIG. 1) up to their folded position (FIG. 4) and vice versa. The opposite surface of said insert 4b, i.e., that facing the insert 3b, is provided with a recess 17, which is a groove in the form of a part of an annulus of such an angular amplitude as to allow the projection 16, which is housed therein to rotate through the predetermined angle F. At 16a, 16b and 17a, 17b are respectively marked the radial end surfaces of the projection 16 and of the groove 17 respectively, designed to form in combination the two pairs of stop limit means respectively, defining the amplitude of the mutual rotation of said two components. The facing surfaces of the parts forming said bushing assembly are provided with annular facing shoulders 19 of substantially equal diameters which are designed to receive rings 20 made of a suitable material which is capable to reduce the friction between the parts and to facilitate the folding and unfolding of the study-table or desk.

In the folded position, the frames 3 and 4 and the plate 2 are substantially coplanar (FIG. 4) and the plate 2 lies within the frame 3 and this latter lies within the frame 4 respectively (FIG. 3). As the components 2, 3 and 4, starting from their coplanar disposition, have to be brought in their use position, first the frame 3 together with the table-top plate 2 is caused to rotate through an angle F with respect to the frame 4 in clockwise direction in FIG. 4. In fact as the frame 3 is moved in this direction, the plate 2 follows this latter as an integral part, since the end surface 13b is now abutting against the end surface 15b. As the two legs of the table formed by the U-shaped frames 3 and 4 are angularly spaced apart from one another of the predetermined angle F, i.e., as the end surface 16a attains the end surface 17a, any further rotation is prevented in this direction. Thence and still in this clockwise direction the plate 2 is caused to rotate through an angle f, greater than 180° with respect to the frame 3 and the rotary movement will be stopped, as the end surface 13a will abut against the end surface 15a. The parts of the bushing assembly provided between the two components 2 and 3 are so proportionated and positioned that in the use position of these latter, the plane of the plate 2 is substantially horizontal or slightly leans forward, as it is usually required in the case of study-table or bench.

Even if the boy using this study-table forces his elbows against the table-top, said study-table remains steadily in its use position.

It is to be pointed out that as the three main components 2, 3, and 4 have to be assembled, it will be only necessary to insert the various parts forming each bushing assembly on the corresponding shaft 12 and then to connect said parts to each other by means of the retaining screw 11 which engages with the inner threaded surface 12a of said shaft 12, while its head 11a is received into the hole 10a and it cannot be seen from the outside, since said hole 10a faces the inner side of the peripheral edge of the plate 2. It is also to be noted that the study-table of the invention can be placed near a wall with its plate 2 resting against this wall and in a substantially upraised position (shown in dotted lines in FIG. 1) so as to reduce the space occupied by the

study-table and without being necessary to complete the its folding, but leaving the frames 3 and 4 in their use position.

I claim:

1. A foldable study-table or the like adapted to collapse into a compact form comprising: a table-top plate, a first or outer U-shaped frame and a second or inner U-shaped frame, said frames being pivotally connected to each other along a common transverse horizontal axis so that one frame is adapted to be nested within the other frame; the U-shaped frames form the legs of the study-table, and are connected to one another at the free distal ends of the legs formed by said frames, and said frames being pivotally connected to opposite sides of said table-top plate near the rear sides of said table top plate by means of bushing assemblies; said study-table having a collapsed or stored condition wherein said table-top plate is nested within said U-shaped frames so as to provide an overall coplaner configuration; said bushing assemblies including limit stop means, adapted to limit the angular amplitude of the relative rotation between said frames, and defining a stop position for said study-table and said frames when they are coplaner in the storage position, and when they are in an erected or use position; and said first and second U-shaped frames form with respect to one another an angle less than about 90°.

2. A study-table according to claim 1, wherein said table-top plate is provided with at least one recess; and the angle through which said table-top plate rotates with respect to the second U-shaped frame is greater than about 180°.

3. A collapsible study-table according to claim 2, wherein said recess is shallow and substantially large in cross sectional area, and an insert resistant to cuts and scratches is disposed in said recess so as to form an overall flush surface.

4. A study-table according to claim 3, wherein additional recesses are provided along one side of said table-top plate for accommodating various writing utensils.

5. A study-table according to claim 1, wherein a reinforcing band is applied about the peripheral edge of said table-top plate.

6. A study-table according to claim 1, wherein said frames are of tubular construction, and the yoke or connecting portion joining said legs having means for preventing said frames from sliding along the floor.

7. A study-table according to claim 1, wherein the free distal ends of said legs include mutually cooperatively associated first and second bushing elements pivotally connected together with associated third bushing elements extending from opposite sides of table-top plate, whereby said U-shaped frames and said table-top plate are adapted to rotate about said common axis passing through said bushing assemblies.

8. A study-table according to claim 7, wherein said bushing assemblies are symmetrically identical, and said first bushing element comprising a shaft element passing through said second bushing element and into said third bushing element, and fastener means connecting said bushing elements together as an assembly so that said bushing elements are rotatable with respect to each other.

9. A study-table according to claim 8, wherein said second bushing elements extend from the legs of said inner U-shaped frame and are disposed intermediate

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said outer U-shaped frame and said table-top plate; each of said first bushing elements having an annular sector-shaped recess engageable with an annular sector-shaped projection provided on a face of said second bushing element; each of said third bushing elements having an annular sector-shaped projection engageable with an annular sector-shaped recess provided on an-

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other face of said second bushing element; and the end surfaces of said annular sectorshaped recesses and said annular sector-shaped projections forming said limit stop means upon said surfaces abutting up against each other upon the relative rotation of said frame and table-top plate.

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