Sept. 14, 1965 H. N. GROW ETAL 3,206,268

STUDENT DRAFTING TABLE

Filed Jan. 22, 1962 3 Sheets-Sheet 1

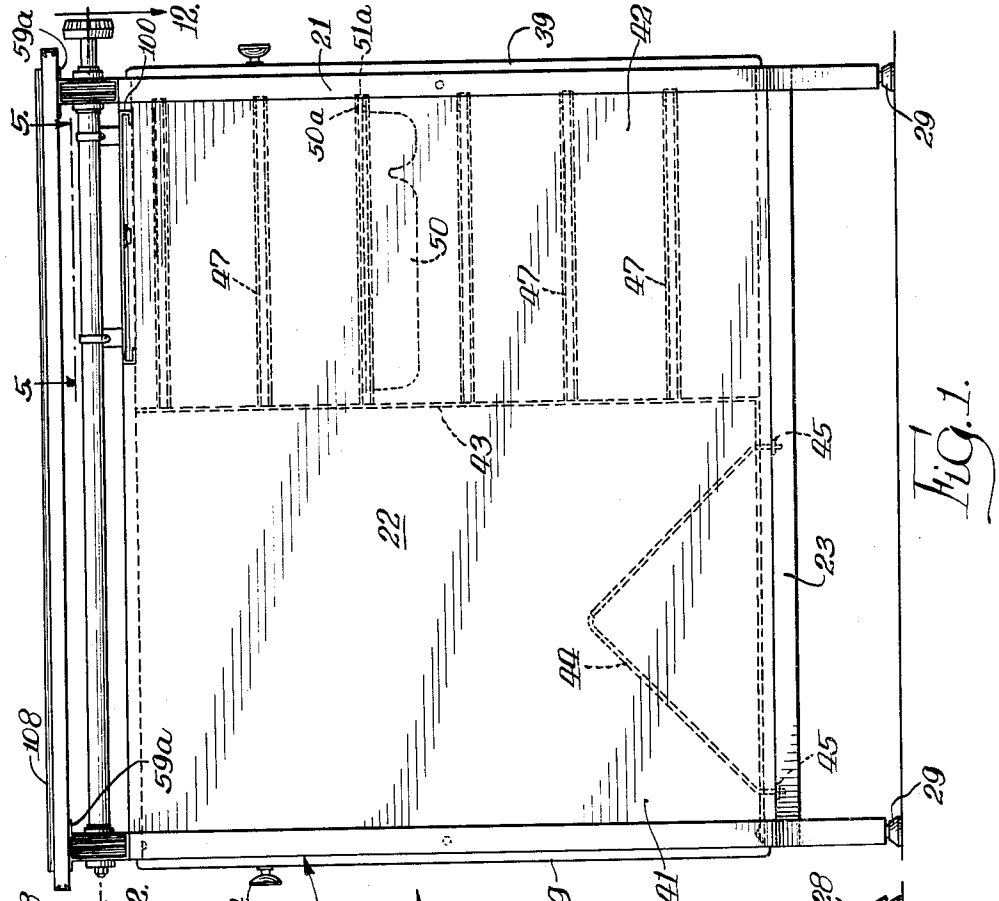


FIG. 1.

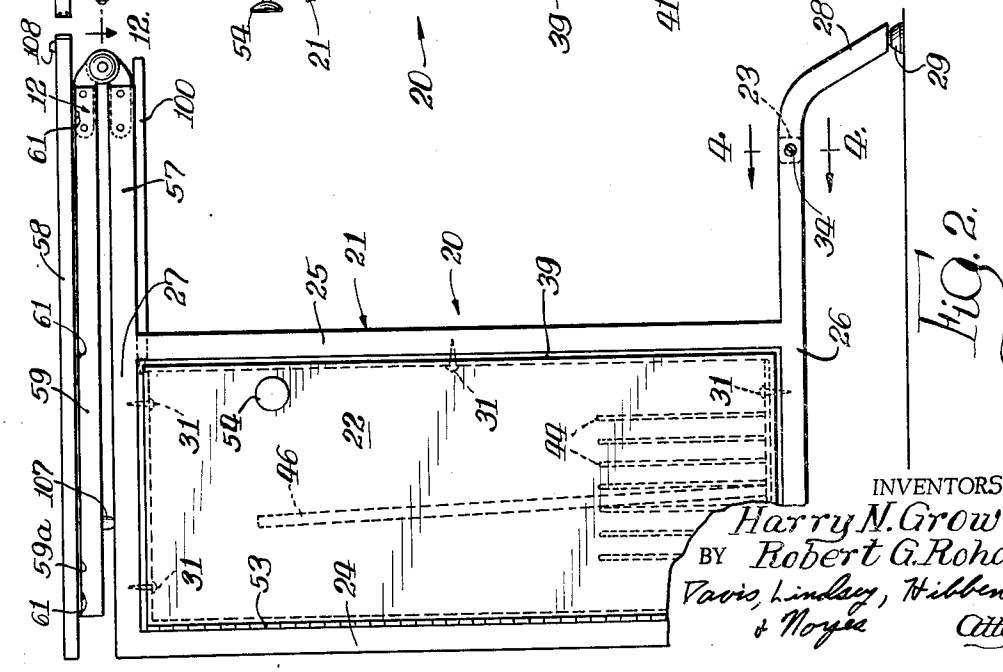


FIG. 2.

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STUDENT DRAFTING TABLE

Filed Jan. 22, 1962 3 Sheets-Sheet 2

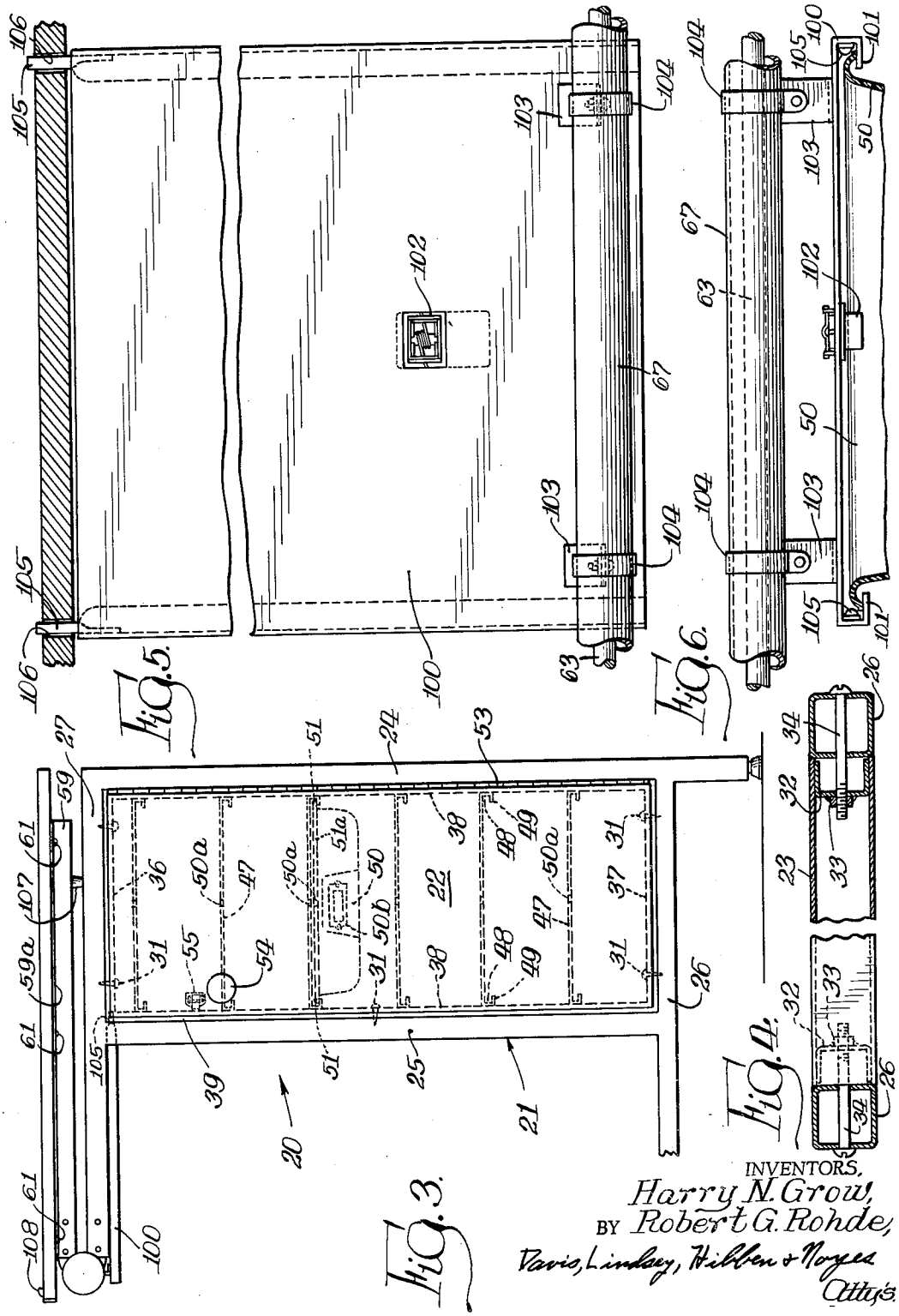


FIG. 5.

FIG. 6.

FIG. 4.

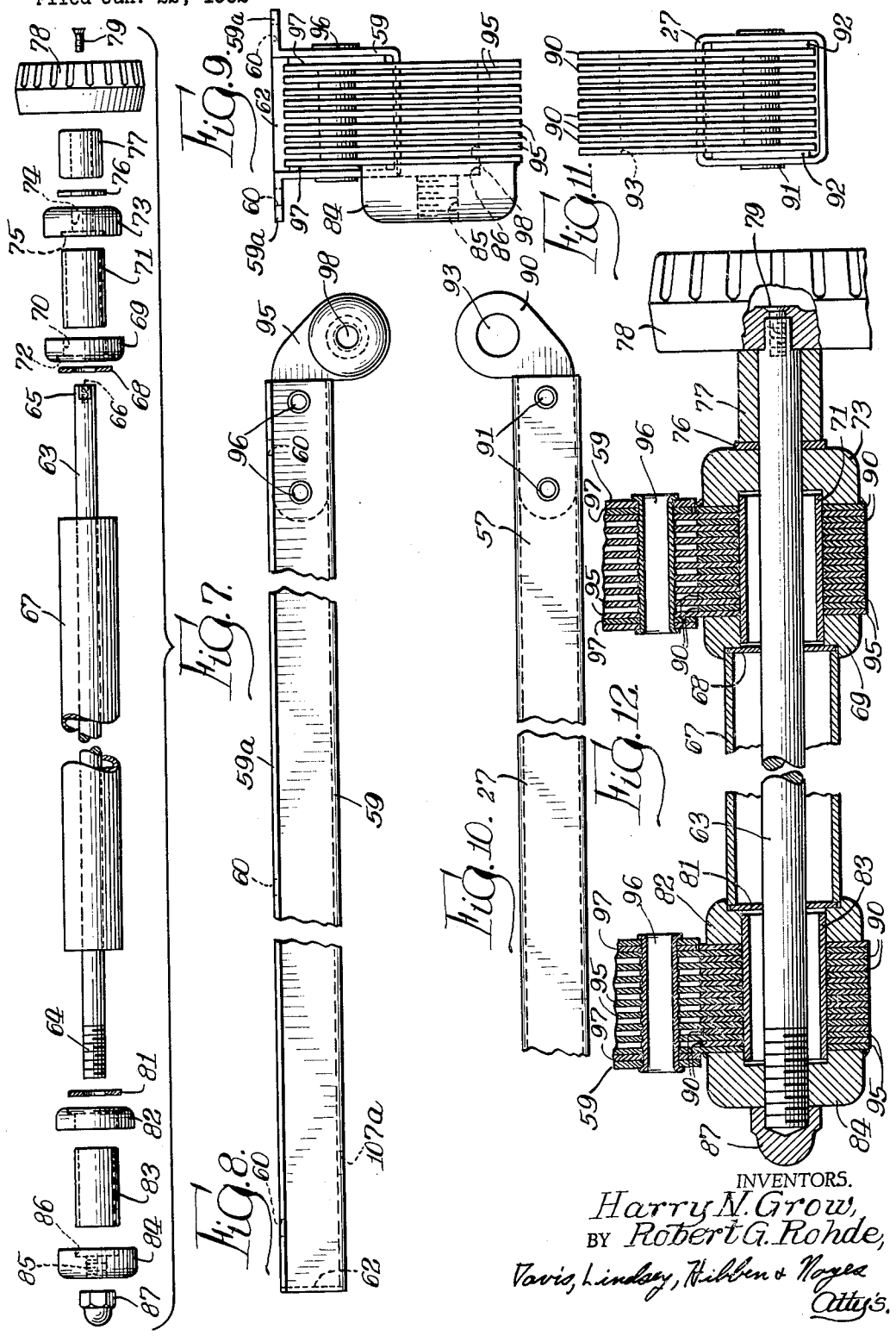
FIG. 3.

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STUDENT DRAFTING TABLE

Filed Jan. 22, 1962 3 Sheets-Sheet 3



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United States Patent Office 3,206,268 Patented Sept. 14, 1965

3,206,268

STUDENT DRAFTING TABLE

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Filed Jan. 22, 1962, Ser. No. 167,524
8 Claims. (Cl. 312—231)

This invention relates to drafting tables and, more particularly, to a drafting table suited for use by a number of students in a classroom.

Drafting tables in a school classroom are usually used by a succession of students during the different class hours. A drafting table of this kind should therefore include means for storing drawing equipment for several students when not in use and means for supporting a student's equipment at a convenient position when he is using the table.

It is also important that a table of this kind be sturdily, and yet economically, constructed, and include such conveniences as a foot rest, means for locking the drafting board at various inclined angles, etc.

Therefore, it is an object of this invention to provide a student drafting table that is sturdily and economically constructed.

It is another object of this invention to provide a student drafting table that includes means for storing equipment and supplies for several students when not in use.

Another object is to provide a student drafting table that includes means for supporting at a convenient position the equipment and supplies for one student when they are in use.

Still another object is to provide a student drafting table that includes a foot rest and means for supporting a drafting board at various angles of inclination.

Other objects and advantages of the invention will become apparent from the following detailed description taken in conjunction with the accompanying figures of the drawings, in which:

FIG. 1 is a front elevational view of a drafting table embodying the features of the invention;

FIG. 2 is an elevational view of the left side of the drafting table shown in FIG. 1;

FIG. 3 is an elevational view of the right side of the drafting table;

FIG. 4 is an enlarged sectional view taken substantially along the line 4—4 of FIG. 2;

FIG. 5 is an enlarged fragmentary sectional view taken substantially along the line 5—5 of FIG. 1;

FIG. 6 is a fragmentary elevational view of the structure shown in FIG. 5;

FIG. 7 is an exploded view of the parts of an adjustable board supporting mechanism;

FIG. 8 is a side elevational view of a top support;

FIG. 9 is an end elevational view of the top support shown in FIG. 8;

FIG. 10 is a side elevational view of a top supporting rail;

FIG. 11 is an end elevational view of the top supporting rail shown in FIG. 10; and

FIG. 12 is a view partially in section taken generally along the line 12—12 of FIG. 1 showing the assembled board supporting mechanism.

In general, a student drafting table embodying the invention comprises a frame structure and a top or drafting board tiltably mounted on the frame structure. The frame structure comprises two spaced apart side frame members that are positioned in substantially vertical and parallel planes. The lower portion of each side frame member forms front and rear legs for the drafting table. The two side frame members are secured together by a cross rail, which also serves as a foot rest, connected between the two front legs, and a cabinet that is positioned within openings formed in the side frame members and secured thereto. In addition to providing support for the side frame members, the cabinet also provides storage space for drafting boards and trays for equipment and supplies. An additional support for a tray is provided at the front of the table so that a student can place his tray at a convenient position when he is working at the table.

The upper portion of each side frame member extends toward the front of the drafting table, and an adjustable board supporting mechanism is connected between these two extensions. The top or drafting board is adjustably mounted adjacent its front edge on the adjustable board supporting mechanism.

In greater detail, the frame structure is indicated generally by the numeral 20, FIGS. 1 to 3, and comprises two side frame members indicated generally at 21, a cabinet 22 and a cross rail or foot rest 23. Each side frame member 21 includes a rear vertical leg 24, an upright 25, a bottom rail 26 and a top rail 27. These four parts are preferably constructed from hollow tubing that is substantially square in cross section the corners of which are rounded. In each side frame member, the bottom rail 26 has one end secured to the vertical leg 24 at a point spaced from the lower end of the latter, and is curved downwardly at its other end to form a front leg 28, shown in FIG. 2. Glides 29 may be fixed within the lower end of the vertical leg 24 and within the lower end of the front leg 28 of the bottom rail 26. The top rail 27 has its rear end secured to the upper end of the vertical leg 24, and the vertical upright 25 is secured between the bottom rail 26 and the top rail 27, the two rails projecting forwardly from the upright 25.

The leg 24, the upright 25, and the two rails 26 and 27 of each side frame member 21 are positioned to define an opening which in the present instant is rectangular and has substantially vertical and horizontal sides. The cabinet 22 is rectangular and is positioned within the rectangular openings of the two side frame members 21 and secured thereto as by screws 31, FIGS. 2 and 3, that extend from the inside of the cabinet 22 into the rails 26 and 27.

The cross rail or foot rest 23 interconnects the two bottom rails 26 adjacent the front legs 28 and is also made of hollow substantially square tubing with rounded corners. As best shown in FIG. 4, the ends of the foot rest 23 are shaped to the configuration of the sides of the bottom rails 26. The vertical sides at the two ends of the foot rest 23 are recessed a small amount leaving projections at the top and bottom sides, which fit over and under the rounded corners of the rails 26 and mate therewith. A U-shaped bracket 32 is secured to the inside of each end of the foot rest 23 and a nut 33 is secured to the outside bight portion of each bracket 32. Holes are formed through the vertical sides of the bottom rail 26 and through the bight portion of each bracket 32, and bolts 34 are inserted through these holes and threaded into the nuts 33. When the two bolts 34 are tightened into the nuts 33, the ends of the foot rest 23 are drawn tightly against the inner vertical sides of the rails 26, and rotation of the foot rest 23 is prevented by the mating configurations of the ends of the foot rest 23 and the sides of the rails 26.

The cabinet 22 is substantially rectangular in cross section and is formed with a top 36, a bottom 37, two sides 38, and two doors 39 opening at the respective sides of the table. The interior of the cabinet is preferably divided into two compartments 41 and 42, FIG. 1, by a vertical partition 43 located intermediate the sides of the table. Within the compartment 41, a plurality of vertical and substantially parallel drafting board supports or

guides 44 are fixed. These guides 44 preferably are formed of metal wire or rod and are inverted V-shaped and have their threaded lower ends inserted through suitable holes formed in the bottom 37 of the cabinet 22 and secured in place by nuts 45. The space between adjacent guides 44 is slightly greater than the thickness of a standard size drafting board, so that a drafting board 46 can be supported on edge between the guides 44 as shown in FIG. 2 when not in use.

The other compartment 42 of the cabinet 22 is equipped with a plurality of vertically spaced shelves or tray holders 47. Each shelf 47 is formed from a flat sheet of metal that is turned downwardly and inwardly at its two side edges to form vertical flanges 48 and horizontal flanges 49, shown in FIG. 3, and the shelves are secured in place as by screws inserted through holes formed in the vertical flanges 48 and threaded into the sides 38 of the cabinet 22. A plurality of trays 50 for tools, equipment and supplies, having outturned upper side edges 51 may be provided which are suspended from the shelves 47 by positioning the side edges 51 of the trays 50 on top of the horizontal flanges 49 of the respective shelves 47. Holes 50*a*, FIGS. 1 and 3, are formed through the outturned front side edge 51*a* of the trays 50 and through the shelves 47 adjacent their front edges, so that padlocks may be placed in the holes 50*a* when the trays 50 are fully inserted into the shelves 47. When a tray 50 is so suspended and locked, access to its contents is prevented since the flat center portion of each shelf 47 covers the tray. A label holder 50*b*, FIG. 3, may be attached to the front of each tray 50 so that the students can identify their trays.

The two doors 39 are fastened to a side 38 on each end of the cabinet as by vertical continuous hinges 53, FIGS. 2 and 3. A knob 54 is fixed to the free or unhinged portion of each door 39, and a suitable catch 55 is provided on each door 39 to hold it closed.

Each top rail 27 of the side frame members 21 is provided with an extension 57 (see FIG. 2) that projects toward the front of the drafting table. A drafting board or top 58 is positioned above the frame structure 20 and has two top supports 59 secured to its underside. These two top supports 59 are positioned adjacent the side edges of the board 58 and are positioned a distance apart substantially equal to the distance between the extensions 57 of the end frame members 21. Each top support 59 is channel shaped, and the two arms of each channel are turned outwardly to form two flanges 59*a*, FIGS. 8 and 9. Holes 60 are formed through each flange 59*a* to receive screws 61, FIGS. 2 and 3, threaded into the underside of the board 58. The end of each top support 59 adjacent the back edge of the board 58 is provided with a tongue 62, FIGS. 8 and 9, that extends upwardly between the two arms of the channels to close the end of the channel. The other end of each top support 59 is connected to the extensions 57 of the end frame members 21 by an adjustable board supporting mechanism illustrated in detail in FIGS. 7 to 12.

This mechanism includes a clamping rod 63 that is externally threaded at one end 64 and is flattened on two opposing sides at the other end 65. The end 65 also has an axially extending hole 66 that is internally threaded. A hollow shaft 67 encloses the central portion of the rod 63. At the right side of the table, the mechanism further includes a washer 68 that has an inner diameter slightly greater than the outer diameter of the rod 63, and an outer diameter greater than the inner diameter of the shaft 67. A right hand inside collar 69 has an inner periphery 70 that is larger than the outer diameter of a sleeve 71 adapted to enclose a portion of the rod 63. On its face adjacent the shaft 67, the collar 69 is counterbored at 72 to receive the washer 68. A right hand outside collar 73 has its inner periphery 74 formed to receive the rod 63, and on its inner face is counterbored at 75 to receive the end of the sleeve 71. Also included are a needle thrust bearing 76 and a spacer 77, which are adapted to be slid over the end of the rod 63. Mounted on the end of the rod 63 is a handwheel 78 having a hole with two sides flattened to fit over the flattened end 65 of the rod 63 for preventing the handwheel 78 from rotating relative to the rod 63. The handwheel 78 is held on the end 65 of the rod 63 as by a screw 79.

At the left side, the mechanism includes a washer 81, a left hand inside collar 82 and a sleeve 83 that are identical to the corresponding members 68, 69 and 71, respectively, at the right side. A left hand outside collar 84 is also provided and is counterbored at 86 to receive the end of the sleeve 83. The collar 84 is also internally threaded at 85 onto the threaded end 64 of the rod 63 and a nut 87 is threaded onto the end 64 outside of the collar 84.

With reference to FIGS. 10 and 11, each extension 57 of the side frame members 21 is equipped with a plurality of elbow shaped plates or leaves 90. The leaves are inserted into the ends of the extensions 57 and held in place by tubular rivets 91, the rivets 91 being expanded between the leaves 90 in order to hold the leaves 90 in regularly spaced fashion. Two shims 92 are positioned between the outside of the outermost leaves 90 and the vertical sides of each extension 57. The outer end of each leaf 90 is curved upwardly and has a hole 93 formed in it, to receive the sleeve 71 or 83.

The two top supports 59 are also provided with a plurality of elbow-shaped leaves 95 which are held in regularly spaced fashion within the top supports 59 by two tubular rivets 96 expanded similarly to the rivets 91. Two shims 97 are again provided for each top support 59, and a hole 98 is formed in each leaf 95, to receive the sleeve 71 or 83. At the left hand side of the table as seen in FIG. 1, the left hand outside collar 84 is secured as by welding to the outermost leaf. The other three collars 69, 73 and 82 are not secured to any of the leaves.

FIG. 12 is a sectional view of the board supporting mechanism showing the top supports 59 in a nearly vertical position. The top rails 27 and the top supports 59 are positioned so that the leaves 90 and 95 are interleaved with the left hand collar 84 being on the outside. The sleeves 71 and 83 are inserted into the holes 93 and 98, and after the inside collars 69 and 82, the washers 68 and 81, and the shaft 67 are in place, the rod 63 is threaded into the collar 84 and the nut 87. The right hand outside collar 73, the bearing 76 and the spacer 77 are positioned on the rod 63, and the handwheel 78 is fastened to the end 65 of the rod 63 using the screw 79.

In operation, if the board 58 is to be adjusted by tilting about the axis of the rod 63 and is to be locked in position, the handwheel 78 is turned in a clockwise direction as seen in FIG. 12, which threads the end 64 of the rod 63 into the left hand outside collar 84. This action reduces the distance between the spacer 77 and the left hand outside collar 84 and a compressive force is applied by the two left hand collars 82 and 84 on the leaves between them, and an equal compressive force is applied by the right hand collars 69 and 73 on the leaves between them. The friction between the combined bearing surfaces of the leaves 90 and 95 on each side of the board is amply sufficient to hold the board 58 in any desired position. To change the angle of inclination of the board 58, the handwheel 78 is turned to screw the rod 63 out of the collar 84 a short distance, which releases the compressive force on the leaves 90 and 95. The bearing 76 is provided at the handwheel 78 end of the rod 63 to facilitate release, and the nut 87 prevents removal of the rod and keeps the assembly together.

An additional shelf or tray holder is provided so that a student can have his tools and equipment at a convenient location while he is using the drafting table. This tray holder, indicated by the numeral 100 in FIGS. 1 to 3 and FIGS. 5 and 6, has one end suspended from the shaft 67 of the adjustable board supporting mechanism and its

other end fastened to a side **38** of the cabinet **22**. With specific reference to FIGS. 5 and 6, the tray holder **100** is similar to the shelves **47** mounted in the cabinet **22**. Its side edges are turned downwardly and inwardly to form two horizontal flanges **101** for a tray **50** to rest on. A roll point catch **102** is mounted in an opening formed at approximately the center of the shelf **100**. While this catch **102** will not prevent a tray from being inserted into or pulled out of the tray holder **100**, it does make passage by it somewhat more difficult and, in effect, notifies the student that the tray is nearly out of the tray holder.

The front of the tray holder is suspended from the shaft **67** by two angles **103** secured to the upper surface of the tray holder **100**, and two straps **104** secured to the angles **103** and looped around the shaft **67**. The back of the tray holder **100** is equipped with two studs or pins **105** that are welded to the vertical flanges of the tray holder **100**. Two holes **106** are formed in the side **38** of the cabinet **22**, which are positioned to receive the two pins **105**.

A resilient bumper **107**, FIGS. 2, 3 and 7, may be secured to a hole **107***a* to the underside of each of the two top supports **59** to engage the top rails **57** for protection of the surfaces of the top supports **59** and the top rails **57** when the drawing board **57** is folded down.

The board **58**, which may be a standard type, is preferably provided with a molding **108** to prevent pencils from rolling down or to support another drafting board such as the board **46**, FIG. 2.

From the foregoing description, it is apparent that a novel student drafting table has been provided. The table is especially useful in a classroom where a number of students use the same table. Each student may be assigned a particular drafting board and tray which may be stored in the cabinet when not in use. When they are to be used, the student's board is placed on the board **58** and his tray is placed in the tray holder **100**. As previously mentioned, the table has other important advantages in that it is readily constructed and it is very sturdy. The foot rest **23** also serves to make the table rigid, and it is prevented from rotating by the special configuration of its ends.

We claim:

1. A drafting table comprising a pair of side frames, each providing a rectangular opening at its rear portion and having top and bottom rails extending forwardly from said opening, a cabinet mounted at its ends, in the openings of the respective side frames and securing the side frames together at their rear portions, a foot rest connecting the bottom rails of the respective side frames adjacent their front ends, drafting board supporting means connecting the top rails of the respective side frames adjacent their front ends, a drafting board pivotally supported adjacent its front edge on said supporting means said cabinet being divided into first and second compartments, means in said first compartment for supporting a plurality of trays, means in said second compartment for storing a plurality of drafting boards, and a tray holder suspended between said cabinet and said drafting board supporting means at the front of said table, said tray holder being adapted to support one of said plurality of trays.

2. A drafting table comprising a pair of frame members, each providing an opening at its rear portion and top and bottom rails extending forwardly from said opening, a cabinet mounted at its ends in said openings of said frame members and securing said frame members together at their rear portions, means connecting said bottom rails of said frame members adjacent their front ends, drafting board supporting means connecting said top rails of said frame members adjacent their front ends, a plurality of tray holders mounted within said cabinet, a plurality of trays held by said tray holders, and another tray holder fastened to said drafting board supporting means and said cabinet adjacent the front of the table, and adapted to support one of said plurality of trays.

3. A drafting table comprising a frame structure and a drafting board tiltably mounted on said frame structure, said frame structure including a pair of substantially vertical frame members positioned in spaced apart relation, a cabinet fixed between said frame members, each of said frame members including an upper portion that extends toward the front of said table, a pair of supports fixed to said drafting board, and hinge means pivotally connecting said board supports to said extending portions adjacent the front ends of the latter and adjacent the front edge of said drafting board for mounting said drafting board for pivotal movement about an axis that is adjacent said front edge of said board, said hinge means including a releasable locking means for locking said board supports to said extending portions, said releasable locking means comprising the sole means for locking said board supports to said extending portions.

4. A drafting table comprising a pair of spaced apart frame members positioned in substantially vertical and parallel planes, each of said frame members being shaped to define an opening, a cabinet fixed to said pair of frame members and positioned within said openings, a substantially horizontal forwardly extending portion formed on the upper edge of each of said frame members, a drafting board, means for hingedly connecting said drafting board to said forwardly extending portions, said hingedly connecting means including a releasable locking mechanism for preventing rotation of said drafting board relative to said forwardly extending portions, a plurality of tray holders mounted in said cabinet, and an additional tray holder fastened to said hingedly connecting means and to said cabinet at the front of the table, whereby a tray may be taken out of said cabinet and positioned in said additional tray holder where it is readily available for use.

5. A student drafting table comprising a pair of spaced apart side frame members positioned in substantially vertical and parallel planes, each of said side frame members being shaped to define a rectangular opening having substantially vertical and horizontal sides, a cabinet secured to said pair of side frame members and positioned within said openings, the portion of each of said side frame members forming the top of said opening being extended toward the front of said table and forming a top rail, a tiltable drafting board positioned above said side frame members with the front edge of said drafting board adjacent the front ends of said top rails, and an adjustable board supporting mechanism including releasable locking means connecting said front ends of said top rails to said drafting board, said releasable locking means comprising the sole means for locking said front ends of said top rails to said front edge of said drafting board.

6. A student drafting table comprising a pair of spaced apart side frame members positioned in substantially vertical and parallel planes, each of said side frame members being shaped to define a rectangular opening having substantially vertical and horizontal sides, a cabinet secured to said pair of side frame members and positioned within said openings, the portion of each of said side frame members forming the top of said opening being extended toward the front of said table and forming a top rail, a tiltable drafting board positioned above said side frame members with the front edge of said drafting board adjacent the front ends of said top rails, an adjustable board supporting mechanism connecting said top rails to said drafting board, a plurality of tray holders mounted in said cabinet, and another tray holder positioned at the front of said table and fastened to said adjustable board supporting mechanism and to said cabinet, and adapted to support one of said plurality of trays.

7. A student drafting table as in claim **6**, and further including a pair of top supports fastened to the underside of said tiltable drafting board, said top supports being

positioned a distance apart substantially equal to the distance between said top rails of said side frame members, said adjustable board supporting mechanism connecting said top rails and said top supports.

8. A student drafting table as in claim 7, wherein said adjustable board supporting mechanism comprises a plurality of first spaced apart leaves secured to each of said top rails, a plurality of second spaced apart leaves secured to each of said top supports, said first leaves on each of said top rails being interleaved with said second leaves on the adjacent top supports thereby forming two spaced apart groups of leaves, a hole formed in each of said first and second leaves, a rod extending laterally of said table through said holes in said groups of leaves, one end of said rod being threaded, a handwheel fastened to the other end of said rod, collar means secured to the outermost one of said first and second leaves of the group adjacent the threaded end of said rod and having a threaded portion threaded on said threaded end of said rod, a nut threaded on said threaded end of said rod, means slidably mounted on said rod and extending between said two spaced apart groups of leaves, and bearing means slidably mounted on said rod between said handwheel and the adjacent one of said first and second leaves, whereby rotation of said handwheel in one direction causes said first and second leaves in each of said groups of leaves to be compressed and rotation of said handwheel in the other direction releases the tension on said leaves.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,206,268 September 14, 1965

Harry N. Grow et al.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 5, line 25, for "57", second occurrence, read -- 58 --; column 6, line 50, after "said", first occurrence, insert -- front edge of said --.

Signed and sealed this 31st day of May 1966.

SEAL)
ttest:

RNEST W. SWIDER
ttesting Officer

EDWARD J. BRENNER
Commissioner of Patents