Jan. 28, 1936. W. P. YOW 2,029,280

EXTENSION TABLE

Filed April 22, 1935 3 Sheets-Sheet 1

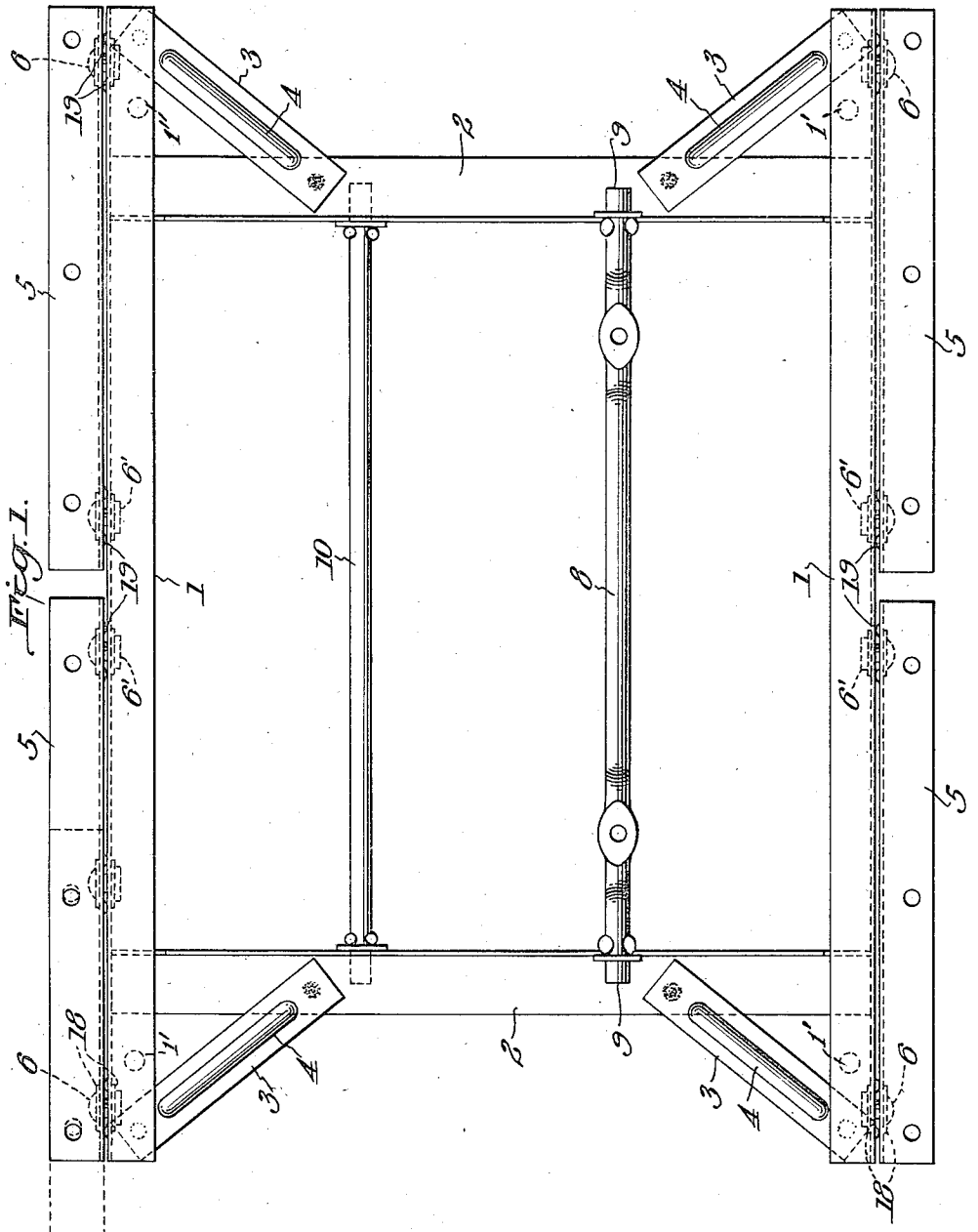


Fig. 1.

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EXTENSION TABLE

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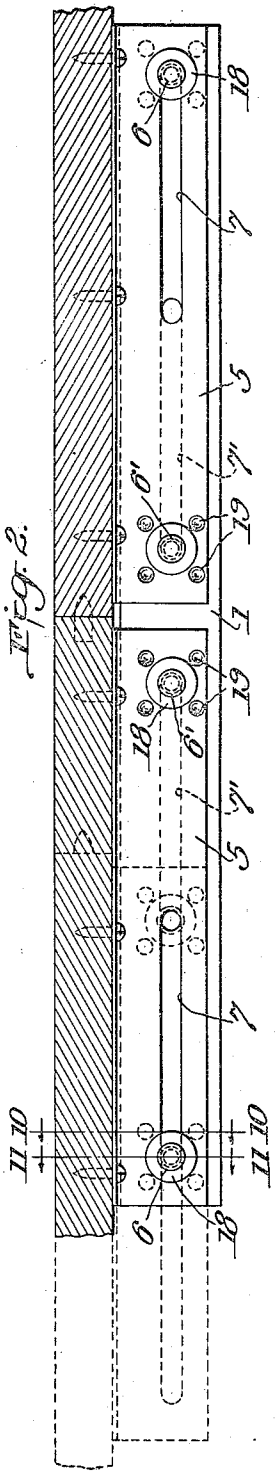


Fig. 2.

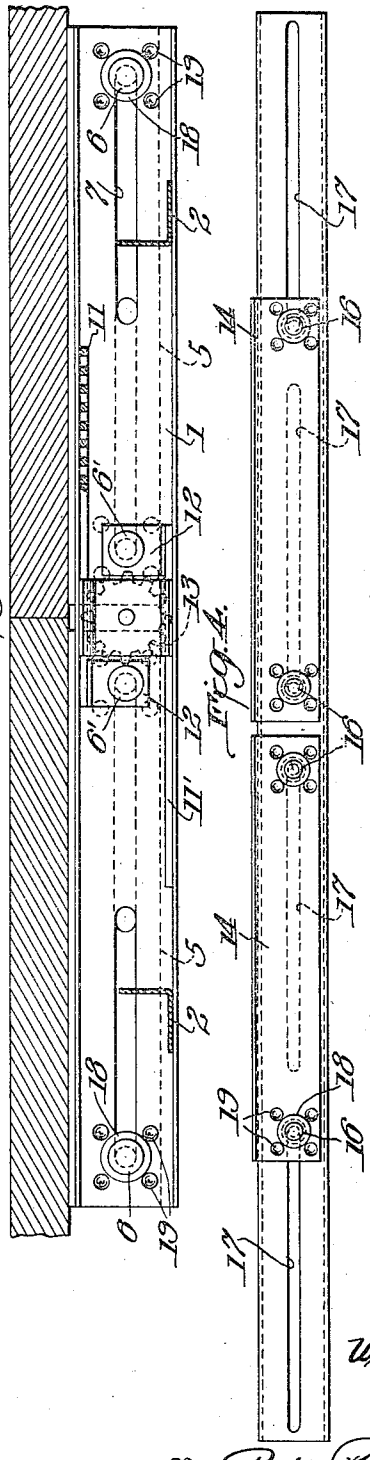


Fig. 3.

Fig. 4.

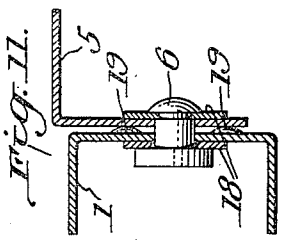


Fig. 11.

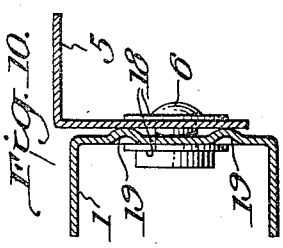


Fig. 10.

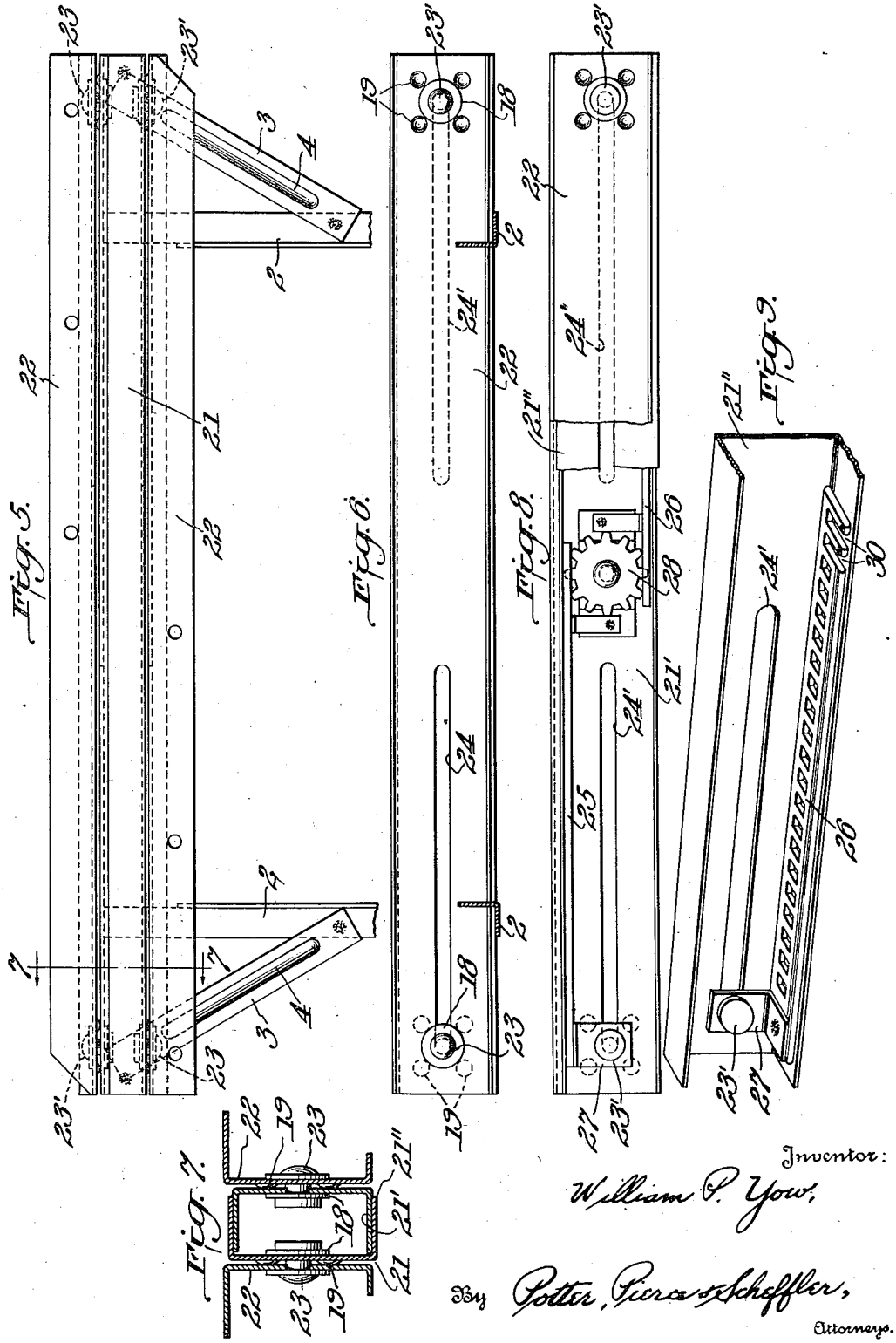
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EXTENSION TABLE

Filed April 22, 1935 3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,029,280

EXTENSION TABLE

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Application April 22, 1935, Serial No. 17,730

22 Claims. (Cl. 311—73)

This invention relates to extension tables and particularly to metal slide mechanisms for extension tables, and is applicable both to extension tables of the type wherein the sections of the top are movable upon a supporting frame common to both sections and to extension tables of the type wherein the top sections are attached to separable supporting frames.

A principal purpose of the invention is to provide a simple, rugged assembly adapted to permit the smooth opening of movable top sections of a table for the insertion of extra leaves or sections therebetween. A further purpose of the invention is to provide a complete assembly of slide mechanism for extension tables which may be attached to the top and supporting parts of such tables as a unit.

Another purpose is to provide an assembly of slide mechanism for extension tables including supporting or carrying means for folded filler leaves.

Another purpose of the invention is to provide a slide assembly for extension tables including a simple and dependable equalizing mechanism.

A further purpose is to provide a non-warpable, non-binding unitary slide assembly for extension tables.

Other purposes and objects of the invention will appear from the following description of illustrative embodiments of the invention with particular reference to the accompanying drawings in which:

Fig. 1 is a plan view of the extension slide assembly in a form adapted for tables of relatively short extension;

Fig. 2 is a sectional side elevation of the assembly of Fig. 1;

Fig. 3 is a partial view showing equalizer mechanism applied to the structure of Fig. 1;

Fig. 4 is a partial view of a modified form of slide mechanism similar in general arrangement to that shown in Fig. 1 but having all slots in one member;

Fig. 5 is a partial plan view; Fig. 6 is a side elevation; and Fig. 7 is a section on line 7—7 of Fig. 5 of a modification particularly adapted for tables of relatively long extension;

Fig. 8 is a partial sectional view showing equalizer mechanism applied to the form of the invention illustrated in Figs. 5, 6, and 7;

Fig. 9 is a detail view of parts of the equalizer mechanism of Fig. 8;

Fig. 10 is a transverse section on line 10—10 of Fig. 2 illustrating means for positioning the slides in appropriate spaced relation; and

Fig. 11 is a fragmentary sectional view on line 11—11 of Fig. 2 showing means for assembling the members of the slide mechanism in sliding engagement.

In the embodiment of the invention shown in Figs. 1 and 2, 1 are paired channel members forming stationary rails. Rail members 1 are rigidly connected in parallel spaced relation by cross members 2 preferably of angle section. The connections between rail members 1 and cross members 2 are strengthened by means of brace members 3 which are preferably impressed with a dished portion 4 in the web thereof for greater stiffness. The webs of the channels 1 are vertically arranged and form the outer walls of the rigid frame on which the slide members are mounted.

Associated with each of rail members 1 are slide members 5, of angle section, slidably connected to the rail members by means of pin members 6 fixed in rail members 1 and engaging horizontal slots 7 in the vertical portions of the slide members 5 that are parallel to the webs of rail members 1, and pin members 6′ fixed in slide members 5 and engaging horizontal slots 7′ in the webs of rail members 1. It will be noted that the horizontal flanges of the slide members 5 are flat for full surface contact with the table tops and are located slightly above the upper flanges of the rail members 1, see Figs. 10 and 11.

Top sections of the table may be attached to corresponding slide members on each side of the assembly by means of screws passing through holes in the horizontal web of the slide members into the wood of the top sections. The supporting frame and legs of the table may be attached, for example, at the juncture of rail members 1 and cross members 2 by suitable means such as screws or bolts that are passed through openings 1′ in the lower flange of the rail members 1, or if a separable supporting frame is used, each half thereof may be fastened in any convenient way to the corresponding section of the top.

It will be seen that the assembly just described permits easy and smooth separation of the table sections to a degree defined by the length of the slots (being twice the length of a single slot in this form) and predetermined by the width of the extra leaf or leaves provided with the table. Due to the fact that in the construction of the invention the rail members 1 are rigidly and permanently fixed in parallel spaced relation before the assembly is attached to the wooden portions of the table, the operation of the sliding mecha-

nism cannot be affected by warping of the wooden parts, while the attachment of the wooden parts is very much simplified.

A further advantage of the invention is that means for carrying and supporting a folding leaf section may advantageously be provided as part of the unitary assembly. For example, as shown in Fig. 1, a leaf carrying member 8 may be pivotally attached to cross members 2 at 9, while a supporting member 10 may be fixed to cross members 2 in a position adapted to support the leaf section in its folded position. By this construction, all of the metal parts desirable for a strong smoothly operating extension mechanism and folding leaf support are incorporated in a simple, unitary, non-warpable assembly.

In Fig. 3 is shown means for equalizing the movement of the two sections of the table top so that a movement of one section brings about a corresponding movement of the other section. This is effected by means of paired rack members 11 and 11' attached, one to each of the slide members 5, for example by means of lugs 12 engaging pin members 6'. Rotatably mounted at the mid-point of rail member 1 is a vertically disposed pinion 13 engaging rack member 11 at the top and rack member 11' at the bottom, and thereby transferring movements of one slide member 5 and rack attached thereto to the other rack and attached slide member. The floating support of the rack members by means of the end lugs 12 permits a limited relative movement of the rack members with respect to the pinion which insures a proper engagement at all times. The rack members are within and parallel to the upper and lower flanges of the channel shaped rack member 1. In this construction, it will be noted that the equalizer mechanism is entirely mounted within the channel of rail member 1.

In the modified form of construction shown in Fig. 4, the pins 16 are all fixed in slide members 14 and engage slots 17 in rail member 15. It will be seen that the pins could likewise be fixed in the rail member and engage slots in the slide members.

The modification shown in Figs. 5–7 is particularly adapted for tables of relatively great extensibility. In this modification, the rail member 21 is of rectangular section and advantageously comprises two channel sections 21' and 21'' nesting within each other, as shown particularly in Fig. 7. On each side of the rail member 21 is a slide member 22, preferably of angle section. The slide members 22 are connected to the rail members 21, as in the previously described modification, by means of pin members fixed in one of said members and engaging horizontal slots in the other of said members. In the form shown, pin members 23 are fixed in rail members 21 and engage slots 24 in slide members 22, and pin members 23' are fixed in slide members 22 and engage slots 24' in rail member 21.

An equalizing mechanism especially adapted for use with the form of slide assembly shown in Figs. 5–7 is illustrated in Figs. 8 and 9. It comprises rack members 25 and 26 attached, one to each of the slide members 22, for example by means of lugs 27 engaging pin members 23', and a vertical pinion 28, rotatably attached to rail member 21 at its mid-point.

In order to provide for the assembling of the slide and equalizing mechanism without difficulty, it is advantageous to provide one of the racks, for example, rack 26 in the drawing, with two open teeth 30 forming a comb, as distinguished from a perforated strip, at the end of the rack which engages the pinion when the slide mechanism is in fully closed position. In assembling the mechanism, the proper slide member, rack member, pin members and the pinion are assembled on channel section 21', and the corresponding slide member, rack member and pin members are assembled on channel section 21'', the two half portions of the assembly with the parts positioned in fully closed position are now slipped into operative position, which is easily accomplished because of the open end teeth 30, and the channel sections 21' and 21'' are rigidly attached to each other, preferably by spot welding.

The completed assembly is very strong and rigid owing to the reinforced beam structure of rail member 21, and when two such assemblies are united into a unitary table extension mechanism by means of cross members 2 and corner braces 3, a permanently non-binding and non-warpable mechanism is provided ready to be affixed to the wooden parts of an extension table with a minimum of labor and with practically no possibility that the finished article will not operate easily and smoothly.

Figs. 10 and 11 illustrate novel means for connecting the rail members and the slide members in operative sliding relation without the use of washers or similar elements therebetween. In these figures, which represent an enlarged sectional view through lines 10—10 and 11—11, respectively, of Fig. 2, 6 is the pin member, and 18 are washers between the expanded ends of pin member 6 and the rail and slide members. The proper spaced relation between the rail members and the slide members is maintained by means of bosses 19 struck up out of the vertical web of one of said members. As illustrated, the bosses are formed in the web of rail member 1.

It will be seen that the invention provides a simple, rugged and practically foolproof unitary assembly of extension table slide mechanism, including a number of novel and highly advantageous features. It will be apparent that the principles of the invention are not limited to the particular embodiments shown and described for the purpose of illustration and that many modifications may be made therein without departing from the invention.

In the following claims, the term "vertically disposed pinion" identifies a pinion that is supported on a horizontal axis for rotation in the vertical plane.

I claim:

1. An assembly for extension tables comprising a pair of rail members, slide members slidably held in parallel movable relation to said rail members, means rigidly positioning said rail members in spaced parallel relationship, said means consisting of a pair of cross members spaced inwardly from the ends of said rail members and diagonal struts rigidly connected between each cross member and the adjacent rail member, and a carrying member for folding table leaf elements pivotally attached to said cross members.

2. An assembly for extension tables comprising a pair of rail members of rectangular section, each rail member comprising a pair of channels arranged with the webs thereof vertical and spaced apart by the overlapped flanges of the channels, slide members slidably held in parallel movable relation to said rail members by means of connecting elements engaging slots in

at least one of said members, and cross members rigidly positioning said rail members in spaced parallel relationship.

3. In a metal slide assembly for extension tables, the combination with a rail member having a vertically disposed portion, a pair of slide members each having a horizontally disposed portion for attachment to a table top section and a vertically disposed portion, and connecting means including pins fixed to the vertically disposed portions of the respective slide members and extending through slots in the vertically disposed portion of the rail member, of equalizing means comprising a pinion rotatably supported upon said rail member, rack members engaging opposite sides of said pinion, and means supporting said rack members on said pins.

4. A slide assembly as claimed in claim 3, wherein the vertically disposed portions of said slide members are substantially alined in a plane parallel to the vertically disposed portion of said rail member.

5. A slide assembly as claimed in claim 3, wherein the pinion is arranged in a vertical plane.

6. A slide assembly as claimed in claim 3, wherein said rail member is of channel shape with the web thereof in a vertical plane and the flanges in horizontal planes, and said rack members are within said rail member arranged parallel to and adjacent the respective flanges thereof.

7. A slide assembly as claimed in claim 3, wherein said rail member is of rectangular cross-section and comprises two nested channels, and said pinion is supported upon one of the channels of the rail member.

8. A slide assembly as claimed in claim 3, wherein said rail member comprises two channels having vertical webs and nested horizontal flanges, whereby the rail member is of rectangular cross-section, and said equalizing means is positioned entirely within said rail member.

9. In a metal slide assembly for extension tables, the combination with a rail member of rectangular cross-section comprising two nested channels, a pair of slide members having vertically disposed portions arranged parallel to the opposite vertical walls of said rail member, and connecting means including pins fixed to the respective slide members and extending through slots in said rail member, of equalizing mechanism within said rail member comprising a pinion rotatably supported on said rail member, rack members engaging opposite sides of said pinion, and means supporting said rack members upon said pins fixed to the respective slide members.

10. A metal slide assembly as claimed in claim 9, wherein said pinion is supported in a vertical plane upon one of the channels of said rail member.

11. A metal slide assembly as claimed in claim 9, wherein at least one of said rack members consists of a metal strip having edge portions thereof removed to form open teeth constituting a comb section for engaging the pinion.

12. In a metal slide assembly, a rail having a vertical web and horizontal flanges, and a plurality of slide members each having a vertically disposed portion and a horizontally disposed portion for attachment to a table top section, said slide members being adjustably connected to said rail by pins fixed to the vertically disposed portions of said slide members and extending through slots in said web, a pinion rotatably supported on said rail, rack members engaging opposite sides of said pinion, and lugs secured to said rack members and having apertures through which said pins extend, whereby movement of one slide member results in a corresponding movement of the other slide member.

13. An assembly for extension tables comprising a pair of rail members of rectangular section, each rail member comprising a pair of channels arranged with the webs thereof vertical and spaced apart by the overlapped flanges of the channels, a pair of slide members slidably held in parallel movable relation on opposite sides of each of said rail members by means of connecting elements engaging slots in at least one of said members, and cross members rigidly positioning said rail members in spaced parallel relationship.

14. In extension table slide mechanism comprising a rail member including a vertical web and a horizontal flange, a pair of slide members slidably held in parallel movable relation to said rail member, said slide members having horizontally alined portions for connection to table top sections, and equalizing mechanism comprising a rack member attached to each of said slide members and a vertically positioned pinion attached to said rail member engaging each of said rack members on opposite edges of said pinion, said pinion and rack members being positioned entirely within the space defined by the horizontal and vertical projections of the web and flange respectively.

15. In a metal slide assembly for extension tables, a pair of relatively slidable members having sections thereof disposed in parallel planes, pin and slot connecting means for supporting said members in sliding relation, and projecting bosses formed on the said section of at least one of said members adjacent said connecting means for engagement with the surface of the alined section of the other member to space the said sections from each other.

16. A metal slide assembly as claimed in claim 15, wherein said bosses are arranged in spaced groups of a plurality of bosses.

17. A metal slide assembly as claimed in claim 15 wherein the pins of said pin and slot connections are each fixed with respect to one of the relatively slidable members, and the said bosses are arranged in groups about each of said pins, the bosses of each group being formed on the slidable member to which the pin is fixed.

18. In extension table slide mechanism, the combination with a rail member of channel section having a vertically disposed web and a pair of slide members slidably held in parallel movable relation to the web of said rail member by means of connecting elements engaging slots in at least one of said members, of equalizing mechanism positioned within said channel comprising a rack member attached to each of said slide members and a vertically disposed pinion attached to the web of said rail member engaging each of said rack members on opposite edges of said pinion.

19. In extension table slide mechanism, the combination with a rail member of channel section having a vertically disposed web and a pair of slide members slidably held in parallel movable relation to the web of said rail member by means of connecting elements fixed in said slide members and engaging slots in the web of said rail member, of equalizing mechanism positioned within said channel, said mechanism comprising a pair of rack members each attached

to one of said connecting elements and a pinion attached to said rail member engaging each of said rack members on opposite edges of said pinion.

20. In extension table slide mechanism, the combination with a rail member of hollow rectangular section having opposed vertical walls, and a pair of slide members slidably held in parallel movable relation at the opposite vertical walls of said rail member, of equalizing mechanism located entirely within said rail member comprising a rack member attached to each of said slide members and a vertically disposed pinion rotatably attached to said rail member engaging each of said rack members on opposite edges of said pinion.

21. In extension table slide mechanism, the combination with a rail member of hollow rectangular section having opposed vertical walls, and a pair of slide members slidably held in parallel movable relation to said rail member by means including connecting elements fixed in said slide members and engaging slots in said vertical walls of equalizing mechanism within said rail member comprising a pair of rack members each attached to one of said connecting elements and a pinion rotatably attached to said rail member engaging each of said rack members on opposite edges of said pinion.

22. In extension table slide mechanism comprising a rail member of hollow cross section formed of a pair of nested channel members and a pair of slide members slidably held in parallel movable relation, one on each side of said rail member, by means of connecting elements fixed in said slide members and engaging horizontal slots in corresponding channel members, equalizing mechanism within said rail member comprising a rack member attached to connecting elements fixed in each of said slide members and a vertical pinion rotatably attached to one of said channel members and engaging each of said rack members on opposite edges of said pinion, that one of said rack members which is attached to the slide member connected to the channel member opposing the channel member carrying the pinion having open teeth at the end thereof which is in engagement with the pinion in the fully closed position of the slide mechanism.

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