No. 857,757. PATENTED JUNE 25, 1907.

J. REID.

WOODWORKING MACHINE.

APPLICATION FILED APR. 9, 1906.

3 SHEETS—SHEET 1.

Fig. 1.

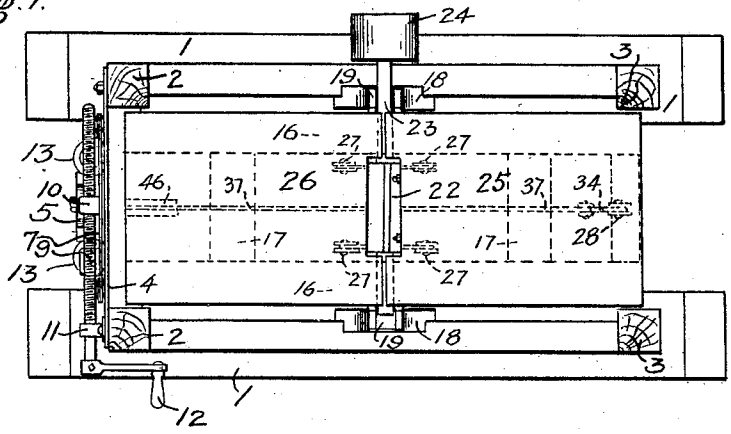



Fig. 2

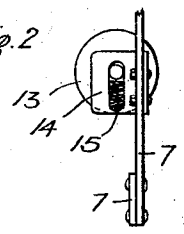
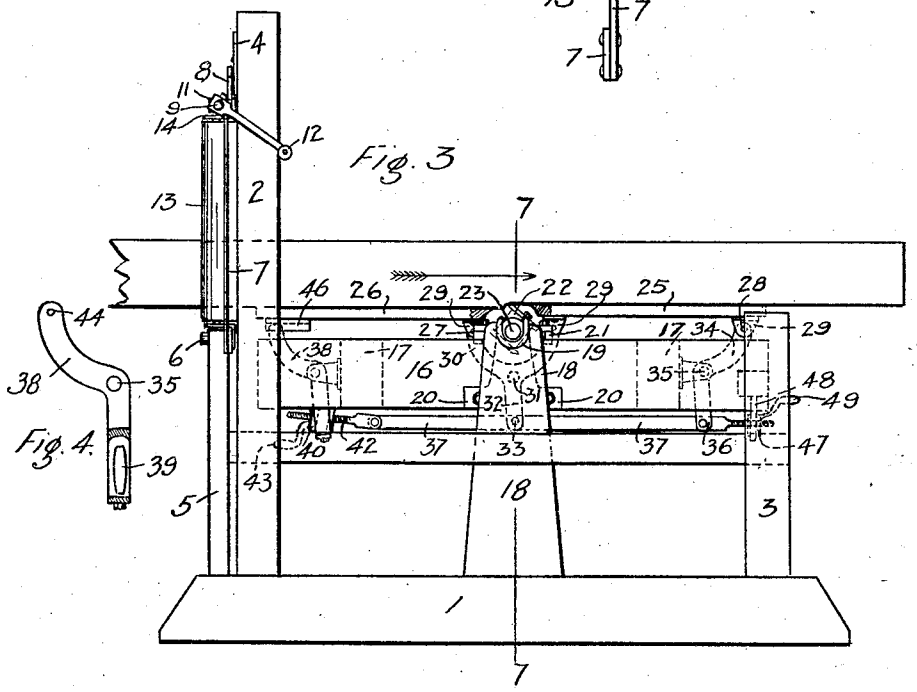



Fig. 3




Inventor

Witnesses

M. A. Van House

Rollin S. Tuttle

James Reid

By P. J. Elliott

Attorney

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3 SHEETS—SHEET 2.

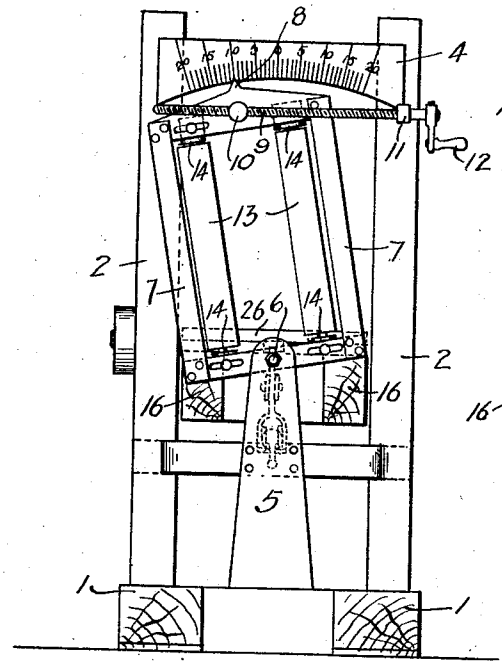


Fig. 5.

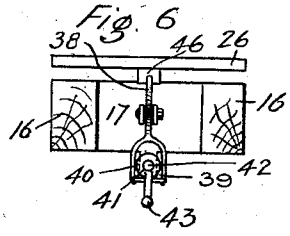


Fig. 6

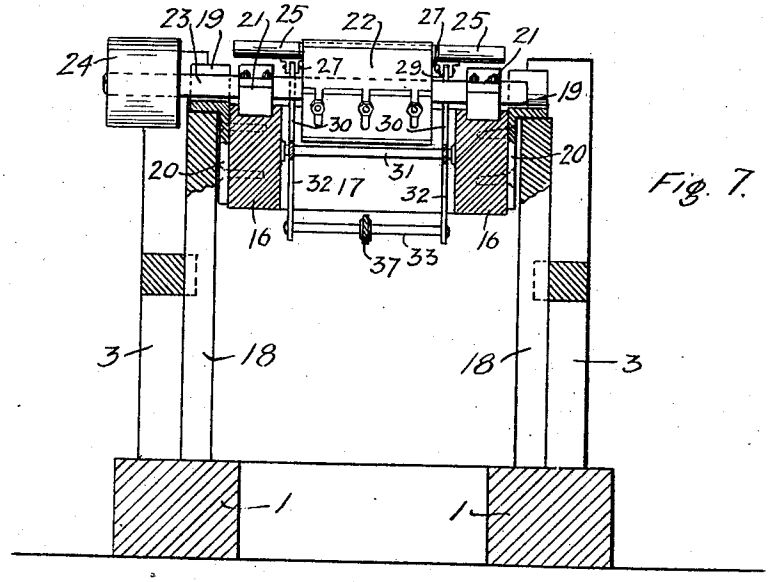


Fig. 7.

Inventor

James Reid

Witnesses:

Wm. A. Van House

Rollin S. Tuttle

By R. J. Elliott

Attorney

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J. REID.

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3 SHEETS—SHEET 3.

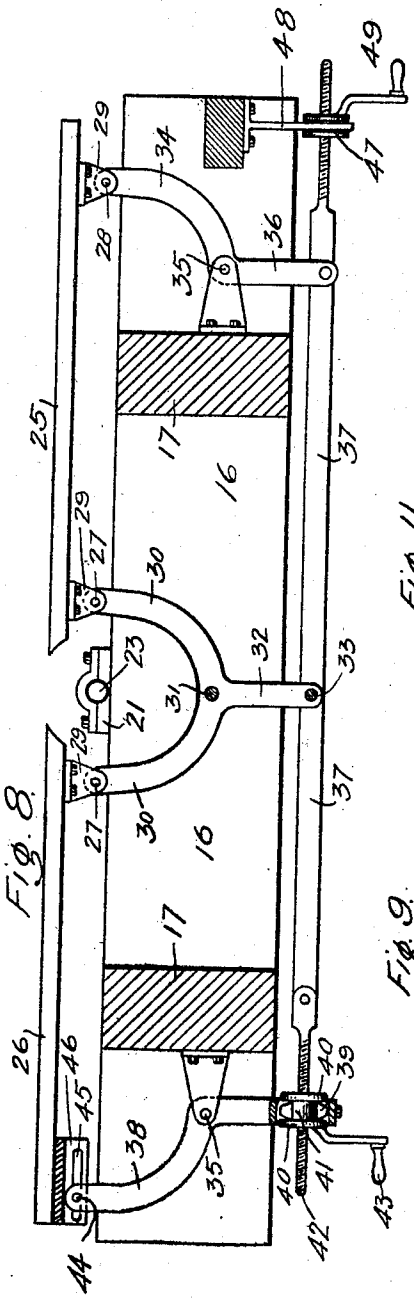

Fig. 8.

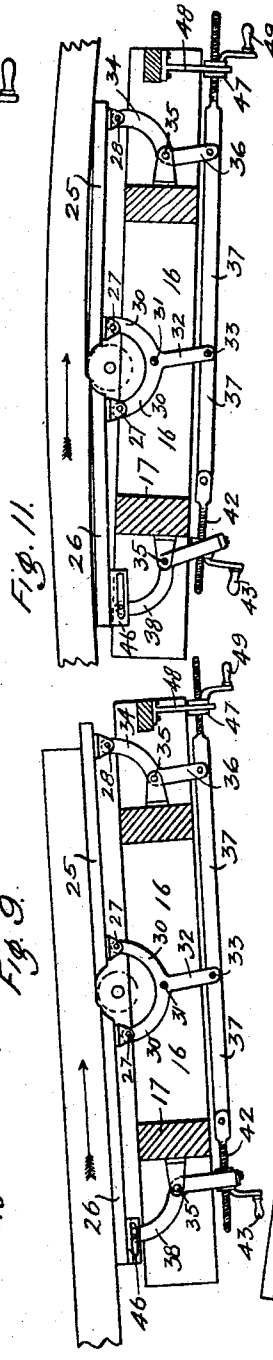

Fig. 11.

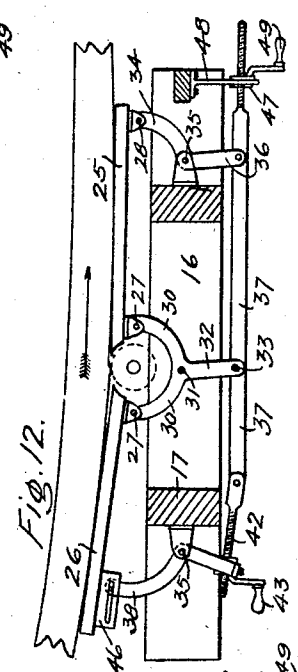

Fig. 12.



Fig. 9.

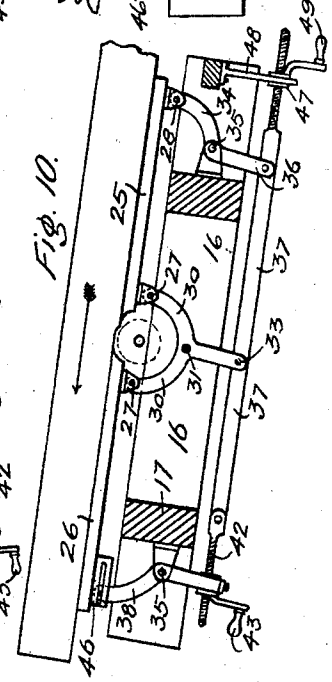

Fig. 10.

Inventor

James Reid

By P. Hellis

Attorney

Witnesses

M. A. Van House

Rollin S. Tuttle

# UNITED STATES PATENT OFFICE.

JAMES REID, OF TACOMA, WASHINGTON, ASSIGNOR TO JAMES S. REID, OF TACOMA, WASHINGTON.

## WOODWORKING-MACHINE.

No. 857,757. Specification of Letters Patent. Patented June 25, 1907.

Application filed April 9, 1906. Serial No. 310,704.

*To all whom it may concern:*

Be it known that I, JAMES REID, a citizen of the United States of America, residing at Tacoma, in the county of Pierce and State of Washington, have invented certain new and useful Improvements in Woodworking-Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to woodworking machines and especially to planers, and consists of novel devices and arrangements whereby I am able to plane by machinery long timbers of varying bevel, of varying thickness, and with a straight edge or a concave edge or a convex edge.

Another object of my invention is to produce a machine table which will adjust itself to any vertical angle at which the timber may be placed thus greatly facilitating the working of the machine as the rollers supporting the timber at the feeding and receiving ends do not need to be adjusted accurately in order to bring the timber into engagement with the cutter, as is the case where a fixed table is used.

A further object of my invention is to enable a long timber to be fed on the machine from either direction so that if both edges are to be worked the timber may first be fed through in one direction and then its other edge placed down on the machine and fed in the opposite direction.

My invention is of general applicability though specially adapted for shaping the timbers used in ship building for which purpose it is specially designed and in which it is in constant use.

I attain these objects by the devices and mechanism illustrated in the accompanying drawing, in which

Figure 1 is a plan of my machine. Fig. 2 is a plan showing the roller adjustment. Fig. 3 is a side view of my machine. Fig. 4 is an enlarged side view of the lever for adjusting the angle of one section of the table. Fig. 5 is a front view of my machine. Fig. 6 is an end view of the swinging cradle showing the mechanism for adjusting the angle of one section of the table. Fig. 7 is a cross-section of my machine on the line 7—7 in Fig. 3. Fig. 8 is an enlarged longitudinal section of the cradle showing the mechanism for controlling and adjusting the sections of the table secured thereto. Figs. 9 and 10 are views showing the cradle tipped in opposite directions and the table sections arranged for planing a straight side of timber, said timber being fed into the machine in opposite directions therein. Fig. 11 is a similar view showing one table section adjusted so that a concave edge can be planed on the timber, and, Fig. 12 is a similar view showing the adjustment for planing a convex edge on the timbers.

Similar numerals of reference refer to similar parts throughout the several views.

In general my machine consists of a frame having one standard at the front end and two opposite standards at the centers of its two sides. To the front standard is pivoted an auxiliary frame carrying a pair of parallel rollers which may be adjusted in their frame. This auxiliary frame is held in any desired angle to the perpendicular by the adjusting screw joining it to the posts of the main frame. The two side standards support a cradle which is free to swing thereon on its horizontal transverse axis and this cradle supports in said axis the rotating horizontal cutter, as well as the upper table. This upper table is made in two similar sections one on each side of the transverse center of the cradle. Each section of the table is supported from the cradle at three points, two near the cutter and one at the center of the ends. These supporting points are all joined together by suitable mechanism pivoted to the cradle and which can be moved as a whole so as to lower one section of the table and raise the other section to compensate for a certain definite depth of cut when the timber is fed in either direction, and also the end supporting point of one section may be separately adjusted on said joining mechanism so that said section can be tipped relatively to the other section without interfering with or altering the action last above described.

Referring to the drawings the base "1" of the machine is provided with a pair of tall posts "2" at one end and with shorter posts "3" at its other end, all said posts being properly connected and braced so as to make a strong and substantial main frame. The posts "2" are joined at their upper end by a

plate "4" on which degrees are marked on each side of the central point, as indicated in Fig. 5. The end standard "5" extends upward from the base "1" to a point a little lower than the upper table as hereinafter described, and supports the auxiliary frame "7" on a pivot "6." The upper end of the frame "7" is provided with a central pointer or indicator "8" which comes into close proximity with the gradations or degrees marked on the plate "4" above mentioned. The frame "7" is controlled on its pivot "6" by means of the screw "9" which engages the swivel nut "10" secured to the frame "7," said screw "9" being held longitudinally in the swivel "11" secured to the post "2" of the main frame. A turning handle "12" is attached to the end of the screw "9." Thus by working the handle "12" the screw "9" will push or pull the frame about its pivot and will alter correspondingly the vertical angle of said frame "7." The guide rollers "13" are mounted in the frame on lines parallel with the central axis thereof being mounted in small angle pieces "14" which are secured to the frame "7" by bolts passing through said angle pieces and slots in said frame so that said pieces "14" are adjustable in said frame. The rollers "13" are allowed a slight movement in the pieces "14" away from the central axis of the frame "7" so as to compensate for any slight irregularity in the thickness of the timber being guided by the rollers "13" without pinching the timber between the rollers. A spring "15" keeps the rollers "13" pressed toward the center (Fig. 2). It is evident then that a timber fed between the rollers "13" will make any desired angle with the horizontal and that this angle may be kept constant or may be changed intermittently or continuously and that since the cutter is mounted horizontally (as hereinafter described) the bevel cut thereby on the timber will correspond with the angle indicated on the gage and that this bevel may be made in either direction.

The swinging cradle consists of a frame having two side members "16" and two transverse members "17" all securely braced and fastened together to form a strong body. This frame is hung on its central transverse axis from the two side standards "18" which are secured to the base "1" and are braced to the posts "2" and "3." The standards "18" are provided with concave depressions on their upper ends into which fit the semicylindrical brackets "19" of the hanger plates "20" which are let into and firmly secured to the centers of the side pieces "16" of the cradle. This arrangement allows the cradle to swing on an axis concentric with the centers of the brackets "19." The bearings "21" are secured to the tops of the pieces "16" in such a manner that their centers will coincide with the axis above mentioned. The cutter "22" is mounted on the shaft "23" which is supported in the bearings "21," and is provided with a suitable driving pulley "24" or by any other suitable device whereby said shaft and cutter may be rotated. The cutter "22" extends along the shaft "23" and cuts with its upper horizontal edges and fits between the two side members "16" of the cradle. Thus the cutter is rotated on a fixed axis and is entirely independent of any swinging of the cradle which supports it.

Referring now particularly to Figs. 7 and 8 it will be seen that the table on which the work is supported consists of two sections "25" and "26" which are supported from and above the cradle. The sections lie normally in one plane parallel with the cradle and divide on the central transverse axis thereof, being however cut out to allow the cutter "22" to pass through them. They are supported on levers which are connected together in such a manner that if one section "25" is raised a certain distance (parallel to the cradle) the other section "26" will be lowered an equal distance (parallel with its former position) and vice versa. As shown in the drawings the section "25" always remains parallel with the cradle but the section "26" may be tipped in either longitudinal direction and then when it is raised or lowered it moves to a plane parallel with said tipped position. This is accomplished in the following manner. The section "25" is supported from three pins, two of which "27" are close to the cutter "22," while the third "28" is located at the center of the outer end of the section. The pins "27" and "28" couple the castings "29," secured to the lower side of the table sections, to the arms of the supporting levers. The two levers "30" are fork-shaped in such a way that the tines pass to each side of the cutter, one tine supporting the inner end of the section "25" while the other tine supports the inner end of the section "26." The levers "30" are exactly similar to each other and are both mounted on the same rod or pivot "31," and have similar downward extensions "32" joined by the rod "33." The lever "34" which is coupled by the pin "28" to the casting "29," at the end of the section "25," is exactly similar to the lever "30" except that the tine corresponding to the one supporting the inner end of the section "26" is omitted. The lever "34" is supported by the pin "35" in a position corresponding with the rod "31." The lower end "36" is joined to the center of the rod "33" by the bar "37" which extends in both directions beyond the parts "33" and "36" respectively. The levers above described are similar in form and are mounted so that any movement of the bar "37" will make them move together and

will either raise or lower the section "25" parallel with the cradle according to whichever direction said bar "37" may be moved.

The section "26" of the table is supported at its inner end exactly similar to the section "25" by the pins "27" engaging the tines of the levers "30," and since they are on opposite sides of the center rod "31" they will have an equal but opposite movement so that if the section "25" is raised a certain distance the inner end of the section "26" will be lowered a corresponding distance. The outer end of the section "26" is however supported in a slightly different manner as follows: The lever "38" is similar to the lever "34" in its general form and is pivoted from a similar pin "35" but it is forked at its lower end and is provided with a pair of inside trunnions "39" (Fig. 6) which engage between the flanges "40" of the nut "41" which is screwed on the rod "42" which is a pivotal extension of the bar "37," the said nut "41" being provided with a handle "43" or other suitable means whereby it is turned so that the distance between the extension "32" and the nut "41" is adjustable by screwing said nut in one direction or the other. The upper end of the lever "38" is similar to the lever "34" but the pin "44" which corresponds to the pin "28" of the section "25" is mounted in the slot "45" in the casting "46" so that any movement of the nut on the screw threaded rod "42" will cause the pin "44" to slide in the slot "45" and will cause the end of the section to rise or lower without altering the position of the pins "27" or affecting in any manner the section "25," and any motion of the bar "37" and its extension "42" will cause the section "26" to rise or fall as a whole parallel to its previous position.

The motion of the bar "37" is attained by screw-threading its end and mounting thereon the nut "47" having flanges which engage in a slot in the hanger "48" which is securely fastened to the cradle. The nut "47" is also provided with a handle "49" or other suitable means whereby it is turned, and as before indicated any turning of the nut "47" will move the bar "37" and will raise and lower the sections "25" and "26" with respect to each other and to the cradle and the cutter. The amount of difference between the levels of the two sections "25" and "26" can thus be regulated by turning the nut "47" and this will be determined by the depth of cut or amount of wood it is desired that the cutter should remove. The higher section of the table will always be the one beyond the cutter in the direction in which the timber is being fed into the machine so that if a timber has been fed from left to right (Fig. 9) it will not be necessary to carry it back again to the end of the machine from which it has come in order to work on its other face but it is only necessary to turn that face down; screw the nut "47" so as to lower the right section and raise the left section; and feed the timber back over the cutter in the opposite direction (Fig. 10); thus saving much time and labor in handling the heavy timbers used in shipbuilding. If a concave timber is to be planed then the screw nut "41" is turned so as to shorten the distance between the lower ends of the levers and thus draw down the outer end of the section "26" so that said timber can be supported on both the sections and yet be reached by the cutter "32" (Fig. 11); while if a convex surface is to be planed the nut "41" is turned in the opposite direction and the end of the section "26" raised the desired amount to support the timber (Fig. 12). Thus it will be seen that all the various parts of my machine unite to produce a planer which will plane any bevel to any straight or curved surface, in either direction, and that the supporting table and cradle automatically adjusts itself to the angle at which the timber is fed on the machine, and that the bevel may be changed as the timber passes through the machine.

I am aware that many changes may be made in my machine but I have shown and described only the simplest form of my invention for which I make the following claims:

1. In a planing machine, the combination of a frame, a swinging table, and a rotating cutter mounted on the axis of said swinging table.

2. In a planing machine, the combination of a frame, a swinging table, guide rollers supported from the frame, and a rotating cutter mounted on the axis of said swinging table.

3. In a planing machine, the combination of a frame, a table swinging on a transverse horizontal axis, guide rollers mounted in an auxiliary frame and adjustable about a longitudinal horizontal axis, and a rotating cutter mounted on the axis of said swinging table.

4. In a planing machine, the combination of a frame, a table swinging on a transverse horizontal axis, guide rollers adjustably mounted in an auxiliary frame, said auxiliary frame being adjustable about a longitudinal horizontal axis, and a rotating cutter mounted on the axis of said swinging table.

5. In a planing machine, the combination of a supporting frame, a swinging cradle, a rotating cutter coaxially mounted thereon, a table formed of two sections one on each side of the cutter, and means secured to the swinging cradle whereby said table sections are adjustably supported.

6. In a planing machine, the combination of a supporting frame, a swinging cradle, a rotating cutter coaxially mounted thereon, a table formed of two sections one on each side

of the cutter, and means secured to the swinging cradle and supporting said table sections whereby they are simultaneously equally and oppositely adjusted.

7. In a planing machine, the combination of a supporting frame, an auxiliary frame transversely pivoted thereto, adjustable means for holding said auxiliary frame in position, guide rollers mounted in said auxiliary frame and adapted to have their axes tipped transversely of the machine by the adjustment of said auxiliary frame, a swinging cradle supported by the main frame on a transverse horizontal axis, a rotating cutter coaxially mounted on said cradle, a table formed of two sections one on each side of the cutter, and means secured to the swinging cradle whereby said table sections are adjustably supported.

8. In a planing machine, the combination of a supporting frame, a swinging cradle, a rotating cutter coaxially mounted thereon, a table formed of two sections one on each side of the cutter and supported by said cradle, and means whereby one of said sections may be adjustably tipped relatively to the other section.

9. In a planing machine, the combination of a supporting frame, a rotating cutter, a table formed of two sections one on each side of the cutter, an inner supporting lever pivoted centrally below said cutter and having tines projecting on each side of said cutter and connected to the inner ends of said sections, end supporting levers corresponding with the respective sides of said inner lever and connected to the outer ends of said sections, a bar joining said levers, and an adjustable screw mechanism whereby said bar is held in any position.

10. In a planing machine, the combination of a supporting frame, a rotating cutter, a table formed of two sections one on each side of the cutter, an inner supporting lever pivoted centrally below said cutter and having tines projecting on each side of said cutter and connected to the inner ends of said sections, end supporting levers corresponding with the respective sides of said inner lever and connected to the outer ends of said sections, a bar joining said levers, an adjustable screw mechanism whereby the length of the bar may be adjusted to tip one of the table sections, and an adjustable screw mechanism whereby said bar is held in any position.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES REID.

Witnesses:
M. H. COREY,
M. A. VAN HOUSE.