Sept. 17, 1940. W. BOARDMAN 2,215,093

FOLDING TABLE

Filed Nov. 22, 1938

Fig. 1.

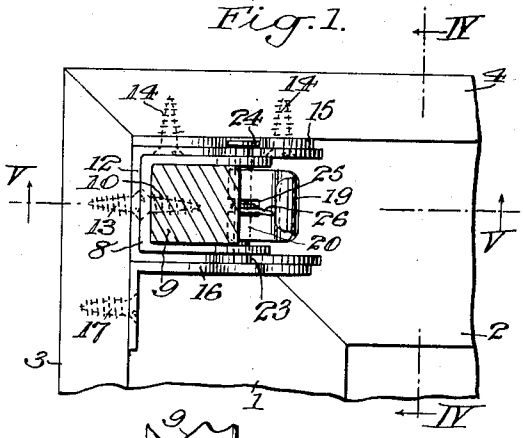


Fig. 2.

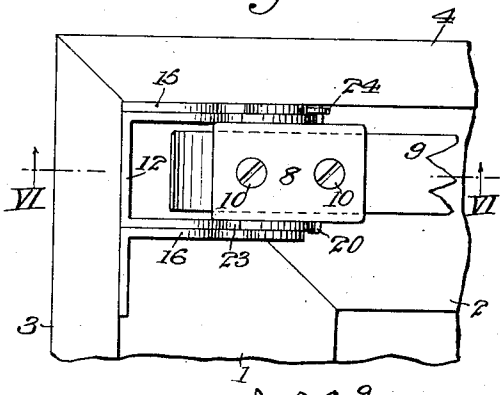


Fig. 3.

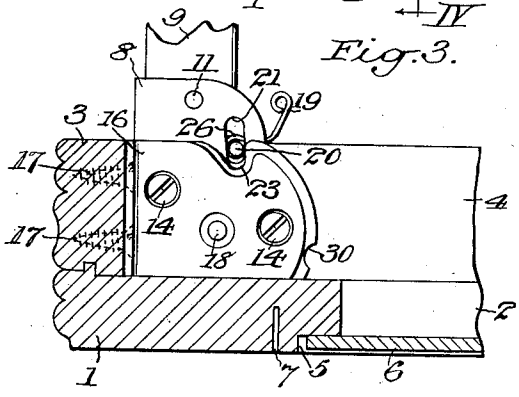


Fig. 4.

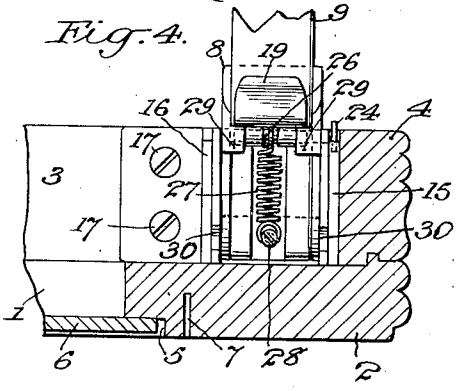


Fig. 5.

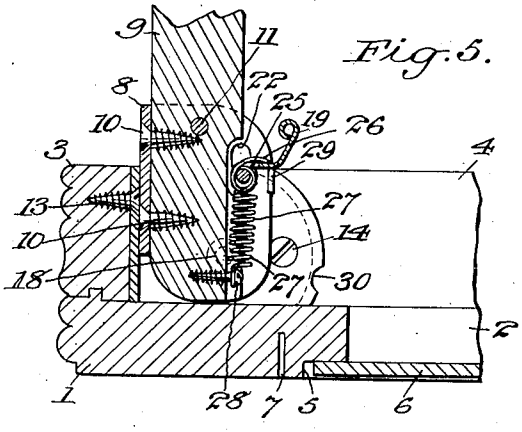
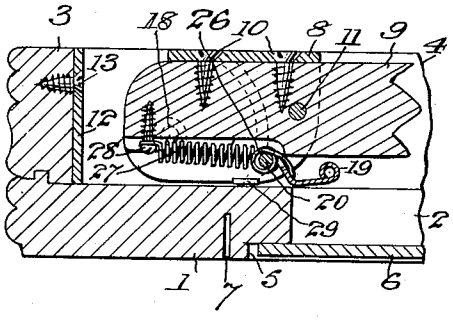


Fig. 6.



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2,215,093

FOLDING TABLE

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Application November 22, 1938, Serial No. 241,804

5 Claims. (Cl. 311—99)

This invention relates to a folding table and has for an object to provide a structure whereby the legs are firmly and rigidly held in their open or operative position without the necessity of any diagonal braces leading from leg to table frame.

Another object consists in providing such a structure in which manual operation of the legs in opening and closing is very simply and easily performed with the aid of mechanism that is positive in action.

Another object consists in providing such a structure in which the mechanical elements constituting the leg attaching, supporting, and actuating mechanism may be very economically stamped out or otherwise formed; and in which assembly of the parts may be expeditiously accomplished at a minimum of labor costs.

A further object consists in providing certain improvements in the form, construction and arrangement of the several parts, whereby the above named and other objects may effectively be attained.

A practical embodiment of the invention is represented in the accompanying drawing, in which

Fig. 1 represents a detail bottom plan view, partly in section, showing a corner of the table frame and a leg in open or operative position;

Fig. 2 represents a view similar to Fig. 1, with the leg in closed or inoperative position;

Fig. 3 represents a detail section, partly in elevation, with the leg in open or operative position as shown in Fig. 1;

Fig. 4 represents a section, partly in elevation, taken at right angles to Fig. 3, and substantially in the plane of the line IV—IV of Fig. 1, looking in the direction of the arrows;

Fig. 5 represents a section taken in the plane of the line V—V of Fig. 1, looking in the direction of the arrows; and

Fig. 6 represents a section taken in the plane of the line VI—VI of Fig. 2, looking in the direction of the arrows.

Referring to the form of the invention shown in the drawing, the table structure includes a peripheral frame composed of four like members, two of which are shown and marked 1, 2. The said frame members are suitably secured to each other at the corners, and they carry depending flanges, which are also alike, and two of which are denoted by the reference numerals 3, 4. The frame members and flanges are preferably composed of wood, and the former are cut away at their inner circumference, as indicated at 5, to provide for reception of a top 6 which may be composed of thin wood, fiber board, or other suitable material, and be secured in place by adhesive, nails, or in any other desired manner. Surrounding the cut away portion 5, there is formed in the frame members a groove 7 which is intended to receive the edges of a flexible covering, not shown, in accordance with a practice now well understood in this art.

The mechanism for fastening, operating, and bracing each leg is the same, so that it is only necessary to show and describe a single one of the four mechanisms with which the table is provided.

The said mechanism comprises a head piece 8 that is U-shaped in cross section so as to closely embrace three sides of the leg 9. This head piece is very firmly secured to the leg by a pair of screws 10, 10, that enter the back of the leg, and by a rivet bolt or the like 11 which passes through the leg and two parts of the head piece, in a direction at right angles to screws 10, 10.

The head piece 8 fits snugly within a housing member 12 that is similarly shaped in cross section and is firmly secured to the flanges 3, 4 by screws 13, 14, 14. The screws 14, 14 also pass through a cheek plate 15 that lies against flange 4, and the opposite side of housing 12 is rigidly pressed and clamped in position by an angle iron 16 which is fastened to flange 3 by screws 17, 17.

A pivot 18 traverses the leg 9 and is held in the sides of housing 12 so as to provide for the usual swinging movement of the leg into open and closed positions, and it will be seen that the elements previously described constitute a very strong and rigid bracing means to prohibit any movement of the leg, when open, in a direction transverse to its plane of swinging, as well as any movement beyond its full opened position.

The structure also includes mechanism for locking the leg in open and closed positions, which mechanism comprises a thumb lever 19, the inner end of which is rolled into a bore for the reception of a pin 20, the extremities of which ride in slots 21, 22 formed in the sides of head piece 8. It will be observed, further, that the sides of housing 12, the cheek piece 15, and the angle iron 16 are cut away so as to permit movement of the said extremities of the pin 20 in slots 21, 22. This cut away formation of one side of housing 12 and of angle iron 16 is well shown in Fig. 3, where the cut away portion in housing 12 is marked 23. The formation of the

cut away in the other side of housing 12 and in cheek piece 15 is the same. Pin 20 has a head 24 on its inner end which lies at all times between one side of housing 12 and table frame flange 4, and thus prevents any longitudinal displacement of the said pin which needs to have no heading or riveting on its other end to resist its dislodgment.

The rolled portion of thumb lever 19 is centrally cut away, as indicated at 25, to receive the extremity 26 of a retractile coil spring 27 which has its lower end anchored by a screw 28 fixed in the leg 9, and its upper end coiled around pin 20. The said extremity 26 of spring 27 bears upon thumb lever 19 so as normally to urge it to a position extending inwardly substantially at right angles to the leg, as well shown in Fig. 5, while the retractile effect of spring 27 tends to draw pin 20 downwardly in slots 21, 22, as also well shown in Fig. 5.

Intermediate its ends, thumb lever 19 rests upon a pair of ears 29, 29 that project toward each other from the sides of head piece 8, the said ears thus constituting, in effect, a fulcrum on which lever 19 operates when its free extremity is manually depressed from the position shown in Fig. 5 in order to lift pin 20 upwardly in slots 21, 22 against the tension of spring 27.

The lower front edges of the sides of housing 12 are cut away to form notches 30, 30 that are fitted to receive the ends of pin 20 when the leg is in folded position in order to lock the leg against accidental displacement from said position, and the retractile tension of spring 27 serves to urge pin 20 into notches 30, 30 when the leg is closed. It will be observed, however, that said notches 30, 30 are somewhat shallow and curved on a radius substantially greater than the radius of the cross section of pin 20. This relative formation enables the forcing or withdrawal of pin 20 from slots 30, 30 by a manual pull upon the leg when it is desired to open the same, so that the lock which holds the leg in closed position may thus be overcome without the necessity of operating any mechanism.

When the leg is in open position, the pin 20 is constantly urged downwardly in slots 21, 22 and in cut away portions 23 formed in the sides of housing 12, thus firmly locking the leg in open position and against collapsing by pressure exerted upon the leg itself. In order to insure that the leg is rigidly maintained in its open position, in spite of wear upon the coacting parts, the slots 21, 22 are set at an angle so as to force pin 20, in its downward movement under the influence of spring 27, against one side of cut away portions 23, which is the right hand side as shown in Fig. 3. As these parts wear, the pin 20 will be urged downwardly a little further from time to time, but it will always be pressed firmly against the said side of cut away portion 23 for the purpose just stated.

In operation, assuming the leg to be closed, it is simply necessary to seize it manually and pull it into open position. This operation, as explained above, will forcibly remove the ends of pin 20 from notches 30, 30 and, when the leg reaches its fully open position, the said ends of pin 20 will be pulled downwardly in slots 21, 22 by spring 27, until they are jammed into cut away portions 23, thus rigidly locking the leg in open position. In order to fold the leg, or return it to closed position, it is necessary manually to press the free extremity of thumb lever 19. This force will cause the lever to swing on ears 29, 29, as a fulcrum and to lift the ends of pin 20 in slots 21, 22, against the tension of spring 27, until they are clear of cut away portions 23. With the said parts in this position, the leg may be swung manually to close it. As the leg approaches closed position, the free end of thumb lever 19 will contact the bottom of frame member 2 and be forced thereby, against the tension of extremity 26 of spring 27, until the said lever 19 lies substantially parallel with the closed leg as well shown in Fig. 6. On opening the leg, the said lever will return, under the influence of spring extremity 26, to its position projecting away from the leg, as well illustrated in Fig. 5.

It will be observed that the structure hereinabove described is entirely devoid of the diagonal braces which are sometimes inconvenient in operation and which are always, at least to a certain extent, in the way, particularly from the point of view of leg room, when a table is in use. The mechanism is simple, economical, adaptable to ordinary forms of table frame construction, and very rigid and positive in operation.

While I have shown the mechanism as applied to the legs of a folding table, it should be observed that the same is applicable to other kinds of furniture which are appropriately equipped with folding legs.

I desire it to be understood that various changes may be resorted to in the form, construction and arrangement of the several parts, without departing from the spirit and scope of my invention, and hence I do not intend to be limited to the details herein shown and described, except as they may be included in the claims.

What I claim is:

1. In an article of furniture having a frame and foldable legs, means for pivoting each leg to the frame and bracing the same comprising, a member embracing three sides of the leg, said member being secured to the leg and having projecting portions, a housing secured to the frame and embracing said member and leg with its edges projecting, said housing permitting swinging movement of the leg and member within the housing to allow folding and unfolding but resisting movement in any other direction to promote rigidity, and complementary mechanism carried by said member and said housing for locking the leg in folded and unfolded positions, said mechanism including slots formed in the projecting portions of said member, recesses formed in the projecting edges of said housing, and a spring actuated pin mounted in said slots with its ends extending into the planes of the projecting edges of said housing for cooperation with said recesses, the angular relationship of the slots and a side of the recesses being such that the ends of said pin will be crowded against said wall of the recesses as it enters the same when the leg is in unfolded position.

2. In an article of furniture having a frame and foldable legs, means for pivoting each leg to the frame and bracing the same comprising, a member embracing three sides of the leg, said member being secured to the leg and having projecting portions, a housing secured to the frame and embracing said member and leg with its edges projecting, said housing permitting swinging movement of the leg and member within the housing to allow folding and unfolding but resisting movement in any other direction to promote rigidity, and complementary mechanism carried by said member and said housing for locking the leg in folded and unfolded positions,

said mechanism including slots formed in the projecting portions of said member, recesses formed in the projecting edges of said housing, and a spring actuated pin mounted in said slots with its ends extending into the planes of the projecting edges of said housing for cooperation with said recesses, the angular relationship of the slots and a side of the recesses being such that the ends of said pin will be crowded against said wall of the recesses as it enters the same when the leg is in unfolded position, said pin having one end provided with a head which is located between the housing and frame and thereby prevents axial dislodgment of the pin.

3. In an article of furniture having a frame and foldable legs, means for pivoting each leg to the frame and bracing the same comprising, a member embracing three sides of the leg, said member being secured to the leg and having projecting portions, a housing secured to the frame and embracing said member and leg with its edges projecting, said housing permitting swinging movement of the leg and member within the housing to allow folding and unfolding but resisting movement in any other direction to promote rigidity, complementary mechanism carried by said member and said housing for locking the leg in folded and unfolded positions, said mechanism including slots formed in the projecting portions of said member, recesses formed in the projecting edges of said housing, and a spring actuated pin mounted in said slots with its ends extending into the planes of the projecting edges of said housing for cooperation with said recesses, the angular relationship of the slots and a side of the recesses being such that the ends of said pin will be crowded against said wall of the recesses as it enters the same when the leg is in unfolded position, and a lever pivoted on said pin and fulcrumed on said member for actuating the pin.

4. In an article of furniture having a frame and foldable legs, means for pivoting each leg to the frame and bracing the same comprising, a member embracing three sides of the leg, said member being secured to the leg and having projecting portions, a housing secured to the frame and embracing said member and leg with its edges projecting, said housing permitting swinging movement of the leg and member within the housing to allow folding and unfolding but resisting movement in any other direction to promote rigidity, complementary mechanism carried by said member and said housing for locking the leg in folded and unfolded positions, said mechanism including slots formed in the projecting portions of said member, recesses formed in the projecting edges of said housing, and a spring actuated pin mounted in said slots with its ends extending into the planes of the projecting edges of said housing for cooperation with said recesses, the angular relationship of the slots and a side of the recesses being such that the ends of said pin will be crowded against said wall of the recesses as it enters the same when the leg is in unfolded position, inwardly extending projections on said member, and a lever pivoted on said pin and fitted to bear upon said projections as a fulcrum for actuating the pin.

5. In an article of furniture having a frame and foldable legs, means for pivoting each leg to the frame and bracing the same, mechanism for locking each leg in both folded and unfolded positions, and means for actuating said locking means including a lever mounted to project inwardly from said leg in the plane of the swinging movement thereof, and yieldable means for normally holding the lever in said position, whereby the folding of the leg will bring the lever in contact with that part of the article of furniture against which the leg is folded and move the lever into a position approximately parallel to the leg, while the unfolding of the leg will permit the lever automatically to reassume its projecting position under the influence of said yieldable means.

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