

March 12, 1929.

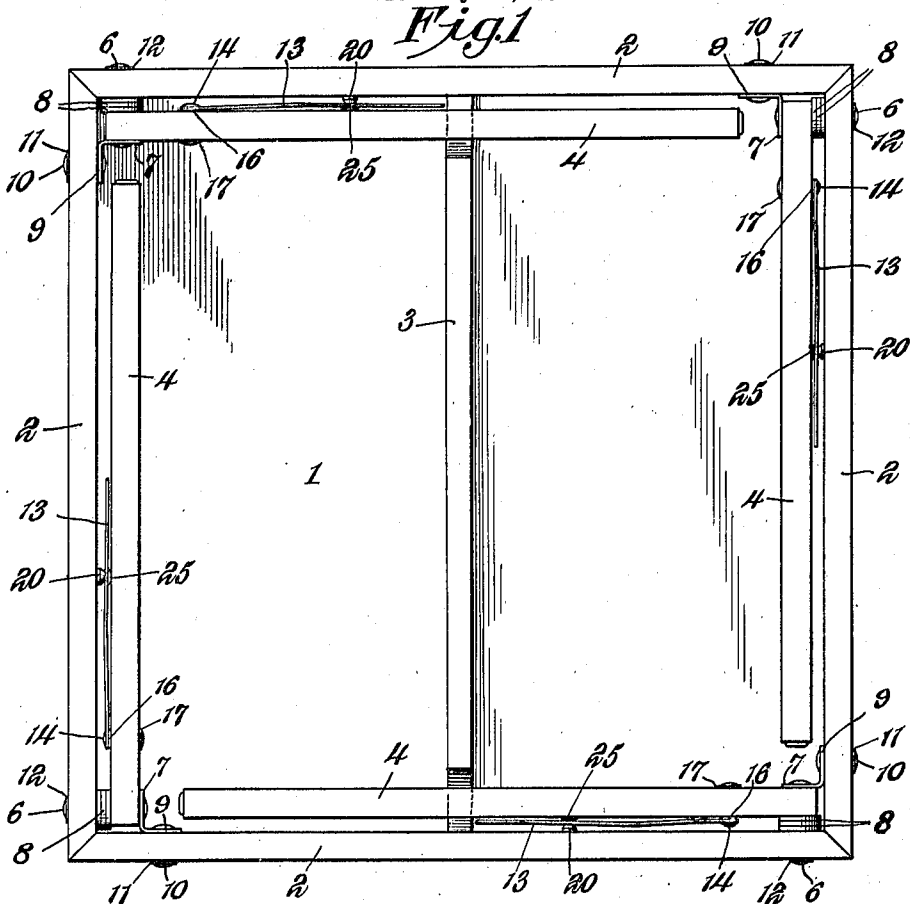
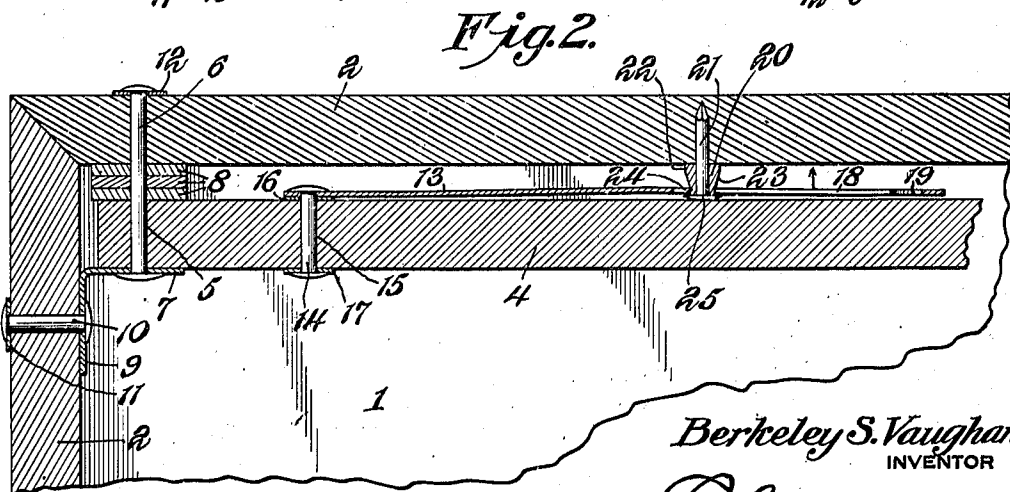
B. S. VAUGHAN

1,705,347

FOLDING STRUCTURE

Filed May 12, 1926

2 Sheets-Sheet 1



WITNESSES

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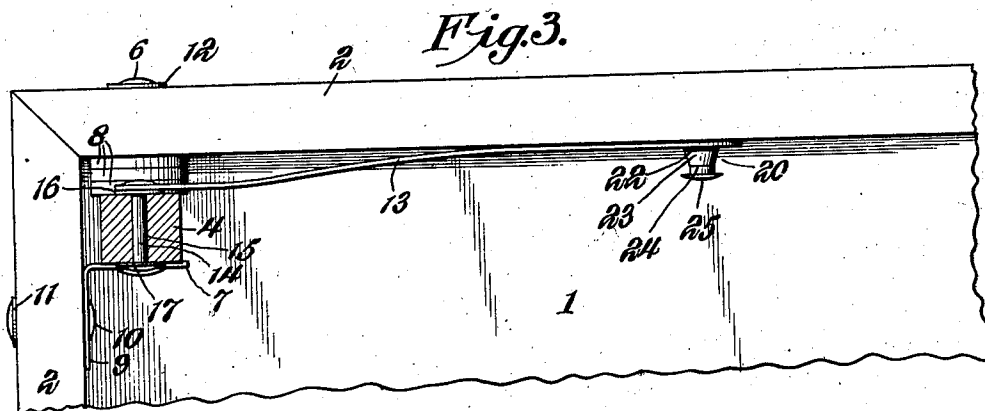
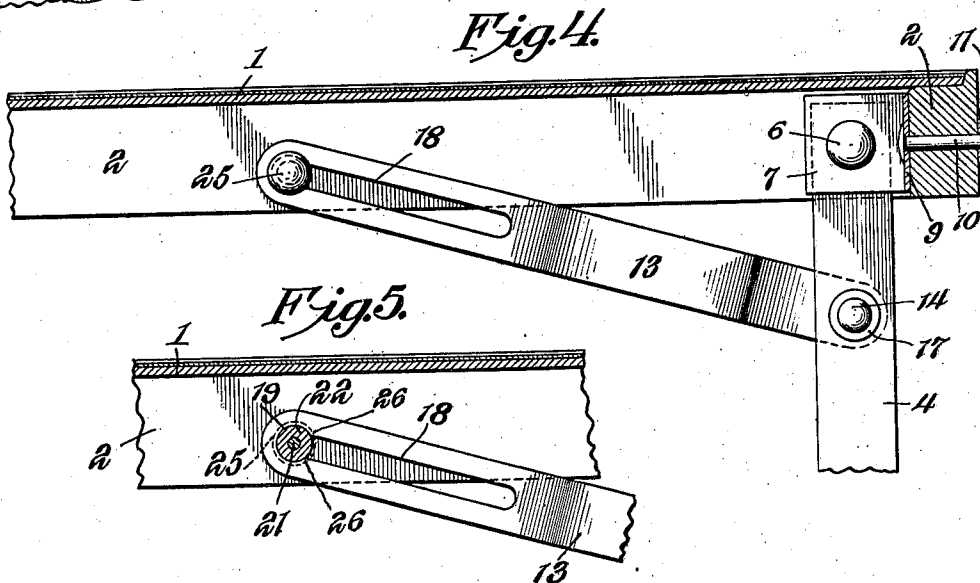
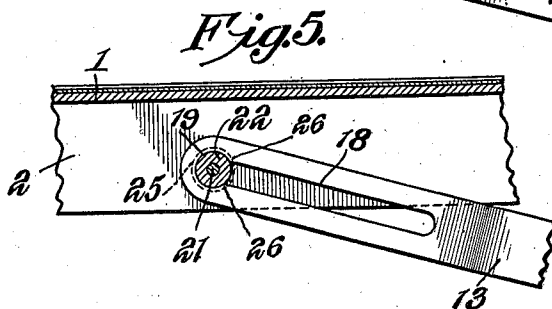
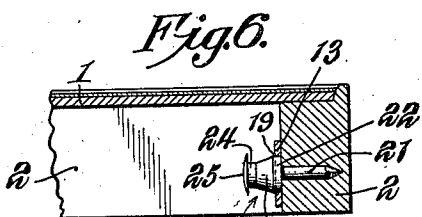
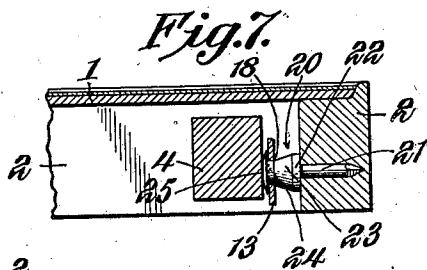
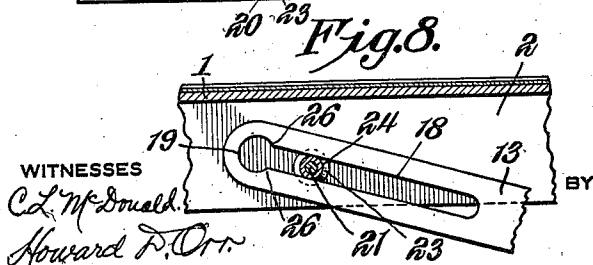
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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FOLDING STRUCTURE.

Application filed May 12, 1926. Serial No. 108,581.

This invention relates to folding tables, and especially to means for holding or locking the legs of such tables in open or active position, though it is capable of a much wider use, as hereinafter indicated.

An object of the invention is to provide simple and efficient means adapted to automatically act to lock the legs as the latter are swung open no matter what position the body of the table may be in, said legs being rigidly held against accidental collapse while supporting the table and so constructed and arranged as to permit of the ready collapse of the table when desired, without danger of injury to the hands.

Another object is to provide locking means of this character which requires no manipulation other than the mere opening or swinging of the legs to cause the same to automatically act, the improvements being easily and cheaply manufactured and readily installed into table structures for locking the legs either individually or in pairs, depending upon the style of the table, or installed in the structure of refrigerators, trunks, chests or the like for automatically stopping and locking the lids or covers thereof in open position, and to readily permit the same to be closed.

A full and complete understanding of the invention may be obtained from a consideration of the following detailed description, taken in connection with the accompanying drawing forming a part of this specification, it being understood that while the drawing shows a practical form of the invention, the latter is not to be confined to strict conformity with the showing thereof, but may be changed or modified, so long as such changes or modifications mark no material departure from the salient features of the invention, as specifically pointed out in the appended claims.

In the drawings, in which similar reference characters designate corresponding parts throughout the several figures:—

Figure 1 is an inverted plan view of a well known form of table having the improvements applied thereto and showing the legs in folded position.

Figure 2 is an enlarged horizontal section through one corner of the inverted table with the leg in folded position.

Figure 3 is a plan view of the same corner

of the inverted table, the leg being swung open into supporting position and shown in section.

Figure 4 is a vertical section through one corner of the table in normal position and showing the improved means holding the leg in supporting relation to the table top.

Figure 5 is a detail view in section of a portion of Figure 4, and showing the parts locked.

Figure 6 and Figure 7 are detail sections taken at right angles to Figure 5.

Figure 8 is a view similar to Figure 5 but showing the parts in unlocked position.

Referring to the drawings, there is shown an ordinary form of table such as is used for playing cards or for sewing, but as the invention becomes better understood, it will be seen that the same may be applied to other forms of tables or to trunks or chests or the like, or wherever it is desired to support by a bracing action a movable member, such as a lid, with reference to another member.

The table top 1 is preferably square in form and is provided with the usual framework formed of marginal strips 2 suitably held together at their meeting ends, and the said table top is further braced and strengthened by a transverse reinforcing strip 3 suitably secured to the under face of the table top.

A separate and independent leg 4 is terminally pivoted to the inner face of each of the marginal strips 2 and adjacent to the corner of the frame, so that when the legs are folded up beneath the table top, the same lie parallel with and close to the inner faces of the strips, and all extending in a similar direction relative to the said adjacent side strip, with the free ends of the legs frictionally held in such folded position by hinging elements to be later described.

For the purpose of pivoting the legs, they are each provided adjacent to one end with a transverse bore or passageway 5, which is adapted to receive a horizontally disposed pivot rod 6 which likewise passes through the adjacent marginal strip 2, the inner end of said rod being mounted in an ear 7 of an angle bracket secured to the inner face of the next adjacent marginal strip 2.

In order to space the leg from the parallel strip 2, a plurality of washers 8 may be interposed between the same and upon the pivot

rod, and the aforesaid bracket is provided with an attaching plate 9 which is held to the said adjacent strip by means of a rivet 10, the outer end of the latter being riveted over a washer 11 to prevent unduly marring the outer face of said strip. The ends of the pivot rod are likewise riveted over, the outer end being also provided with a washer 12 for a similar purpose.

The improved means for locking the legs in open or supporting position, as shown in Figure 4, comprises a thin, spring-metal strip 13 which is pivoted at one end by means of a rivet 14 traversing a suitable passageway formed in the leg adjacent to the aforesaid pivot rod 6, the said strip 13 being located, when the leg is folded as shown in Figures 1 and 2, between the said leg and the adjacent, parallel, marginal strip 2.

A washer 16 is preferably interposed between the strip 13 and the leg to avoid damaging the latter, and a similar washer 17 is carried by the rivet 14, at the inner end of the latter, the ends being riveted over in the usual manner.

The strip 13 is adapted to constitute a strut or brace for holding the leg open or in supporting position, and said strip is provided, at its free swinging end, with a longitudinally disposed slot 18, closed at each end and provided at its outer end with a communicating, enlarged, circular opening or enlargement 19 located close to the end of the strip.

Coacting with the slot 18 of the strut is a stud 20 preferably in the form of an anti-friction roller, mounted for rotation upon a headed pin or nail 21 secured to the inner side of the strip 2, though it is to be understood that the same may be formed integrally with the said pin and without revolubility. The roller is formed with an enlarged base portion 22 located next to the inner face of said strip, and said base portion 22 is joined by a tapered or cone-shaped portion 23 with an outer, reduced end portion 24, the head 25 of the nail or pin bearing against the reduced end of the roller to retain the same thereon.

The reduced end 24 of the roller is of a diameter to freely fit and slide in the slot 18 of the strut, while the enlarged, inner end 22 of said roller is adapted to freely slide into the terminal enlargement 19 of the slot when opposite the same and, when thus engaged, the shoulders 26 which are formed at the junction of the slot and enlargement, are adapted to bear against the larger portion of the roller to prevent retrograde movement of the strut in an obvious manner. (See Figures 5 and 8.)

With the strut mounted in the manner described and with the reduced portion of the roller traversing the slot 18, the leg and strut may be folded up beneath the top of the table and adjacent to the inner face of the adjacent, parallel strip 2 in an out-of-the-way position,

at which time, the roller is located adjacent to the inner end of said slot 18, as shown in Figures 1 and 2.

Midway between its ends the strut is bent to cause the free end thereof to press outwardly at all times so that, when the leg is swung about its pivot 6, the sides of the slot 18 are caused to travel along the reduced portion 24 of the roller, the adjacent conical portion preventing the outward movement of the strut relative to the center of the table, while at the same time the head 25 prevents any opposite movement which might be imparted by some outside force. When the leg has been swung to active position at exactly right angles to the table top, the aforesaid inherent outward tendency of the strut, due to the said bending, causes the enlargement 19 at the end of the slot to spring across the conical portion of the roller and to engage with the enlarged base portion 22 of the same when the leg is effectually locked against further movement in that direction, while the aforesaid shoulders 26 bearing against said portion 22, serve to prevent any retrograde movement of the strut relative to the stud, and the leg is rigidly maintained in the proper position to support the table without any liability of becoming accidentally unlocked. Each leg is moved independently of the others to active position, and when it is desired to knock down or fold the table, all that is necessary is to impart a slight inward pressure upon each strut in turn, upon that portion where exposed between the leg and the marginal strip, to effect its disengagement from the enlarged portion of the coacting roller and to align same with the reduced portion of the latter, when said legs may be folded up against the underside of the table top, as clearly shown in Figures 1 and 2 of the drawings.

In riveting over the ends of the strut pivot 14 considerable tension may be applied to the pivotal point of said strut to provide a tight, frictional joint, the same being greatly facilitated by the interposed washers 16 and 17, so that all lost motion is eliminated and the aforesaid inherent tendency of the strut to spring outwardly is maintained.

The spacing members or washers 8, which are under considerable tension by the riveting of the pivot 6, serve not only to separate the leg from the rail but turn on each other, when the leg is moved about said pivot 6 in either direction, thus providing a metal to metal bearing surface producing great frictional resistance on the leg to hold the same at any position and yet permitting the same to be swung, such a joint being much superior to a wood to metal joint and providing greater durability.

The brace or strut 13, being formed of a single piece or metal, greatly reduces the cost of manufacture and provides a device of great strength and durability by the elimination of

expensive intermediate joints that soon become worn and fail to supply the desired rigidity in the leg brace.

The only parts of the invention liable to wear are the edges of the slot 18 and the small part 24 of the stud or roller 20, which have nothing to do with bracing the leg, as the latter is rigidly held when the enlarged portion 19 of the slot is engaged with the enlarged portion 22 of the stud and these parts, not being subject to wear, will always maintain a nice fit, thus providing for a quick and positive locking action when the strut automatically engages the same.

The distinguishing characteristics of the table leg brace as shown and described reside in the peculiar formation of the coacting parts as embodied in the slotted strut and the cone-shaped roller or stud.

From the foregoing it will be seen that a simple, strong and durable structure has been provided which is especially adapted for card tables, sewing tables or the like, where the table is small and ample room for the knees of the user or users is required, for the lower end of the struts 13 where pivotally connected to the legs, may be closely adjacent to the upper or pivoted ends of the legs 4 to provide such room, and yet ample rigidity maintained in said legs to properly support the table. In addition to the above, by closely associating the strut pivot 14 with the leg pivot 6, the strut will sufficiently brace the leg and may be folded in with the latter along the inner side of the strip 2, without danger of the inner end of the strut abutting the under side of the table top 1, and with the result that the strips 2 may be made narrow or shallow and the entire table structure thus greatly reduced in weight.

What is claimed is:—

1. A brace for hinged table legs and the like comprising, in combination, with a support, a resilient strut pivoted at one end to the leg and having a longitudinal slot terminating in an enlargement adjacent to the free end of the strut, and a stud carried by the support and having a diametrically reduced portion to traverse the slot and a portion of greater diameter to engage in the said enlargement when the leg or lid is swung open, said portions being connected by a tapered portion, said strut normally tending to snap over the enlarged portion of the stud.
2. A brace to hold a hinged table leg in open position relative to the table top, comprising a resilient metallic strut terminally pivoted to the leg, said strut having a longitudinal slot formed at its free end and terminating at its outer end in an enlargement, a

stud roller carried by the table top, said roller having a portion of larger diameter than another portion, said portions being connected by a tapered portion, the smaller portion being adapted to traverse the slot in the strut when the leg is swung, and the larger portion being adapted to engage in the terminal enlargement of the slot when the leg is swung to active or open position, said strut normally tending to snap over the enlarged portion of the stud roller.

3. An automatic locking brace for a swinging table leg comprising, in combination, with a support, a spring strut terminally pivoted to the table leg adjacent to the pivot of the latter and adapted to fold alongside thereof when swung to closed position, said strut having a longitudinal slot near its free end and terminating in an enlargement at the outer end of the same, an anti-friction roller carried by the support and having a portion of smaller diameter at its outer end to traverse the slot and a portion of larger diameter at its inner end to fit the enlargement thereof, the two portions being connected by a tapered portion to facilitate the springing action of the strut and cause the enlargement in the slot thereof to engage the larger portion of the roller when the said member is swung open, and a head formed on the outer end of the roller to prevent disengagement of the strut therefrom.

4. An automatically locking brace for table legs or the like, in combination with a supporting frame, a spring metal strut terminally pivoted to each of the legs, a horizontally disposed anti-friction roller mounted on the inner face of the said frame member for coaction with each of the struts, each strut having a tendency to spring outwardly towards said frame member when the legs are folded, each strut having a longitudinal slot at its free end, each slot being closed at each end and terminating at its outer end in a circular enlargement, said rollers each having a smaller, outer end traversing the slot of the adjacent strut, a terminal head to prevent disengagement thereof, an enlarged inner end adjacent to the frame member and a conical portion connecting the small and enlarged ends to guide the enlargement of the slot into the enlarged end, said enlarged end locking the strut when the latter has sprung outwardly to hold the leg at right angles to the table top.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature.

BERKELEY S. VAUGHAN.