June 9, 1942. E. R. LUTZ ET AL 2,285,597

FOLDING TABLE

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FIG.1.

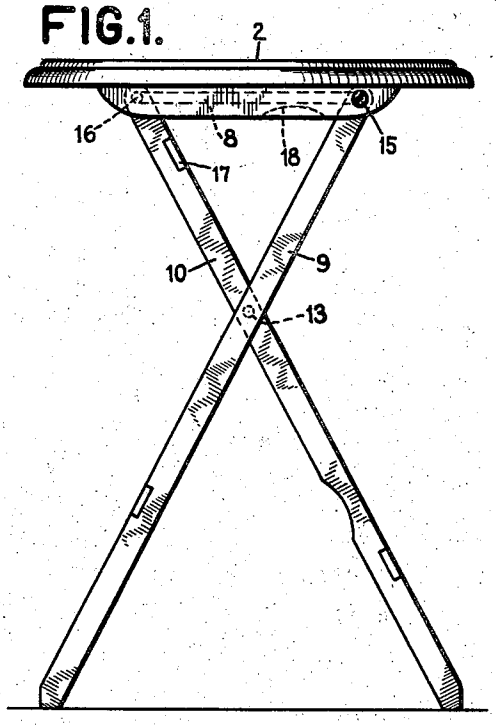
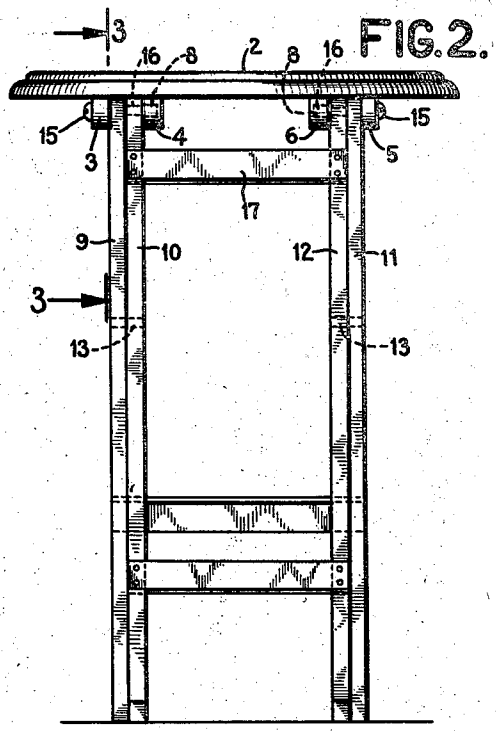


FIG.2.



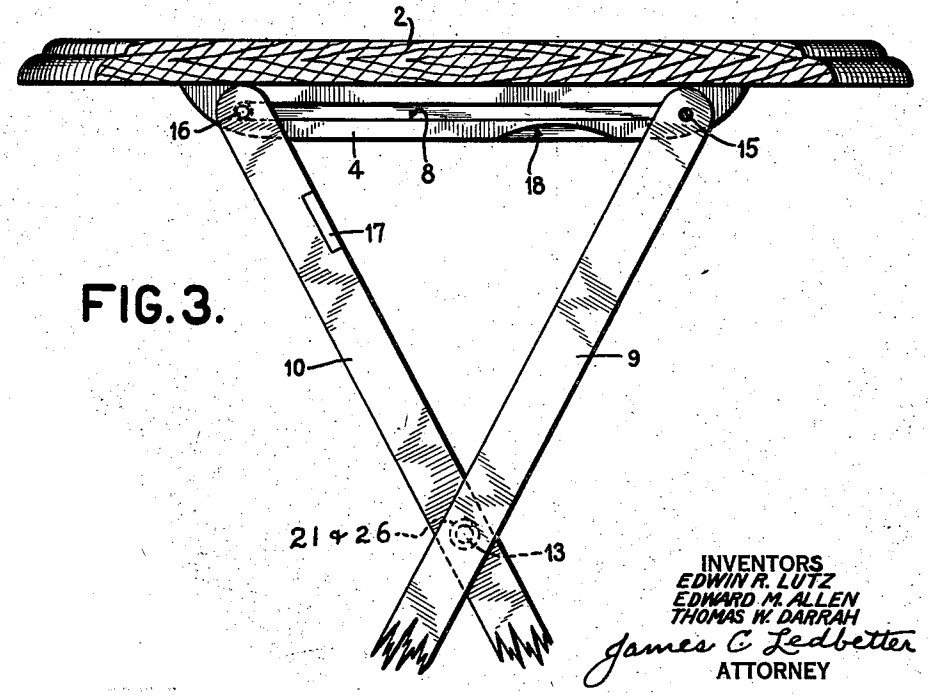


FIG.3.

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FIG.4.

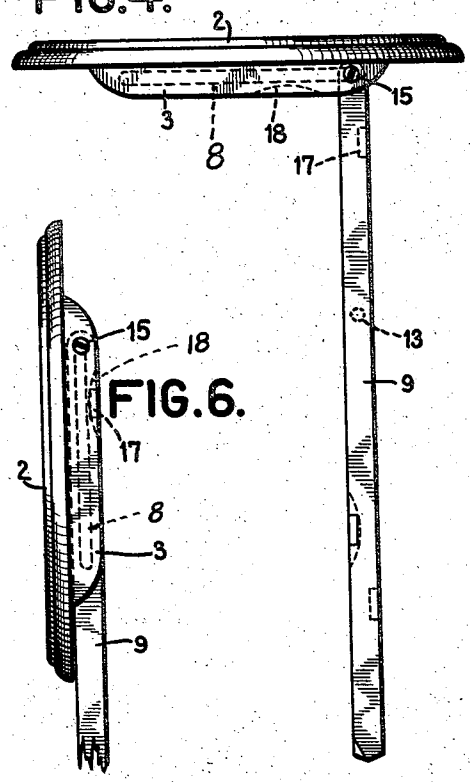


FIG.5.

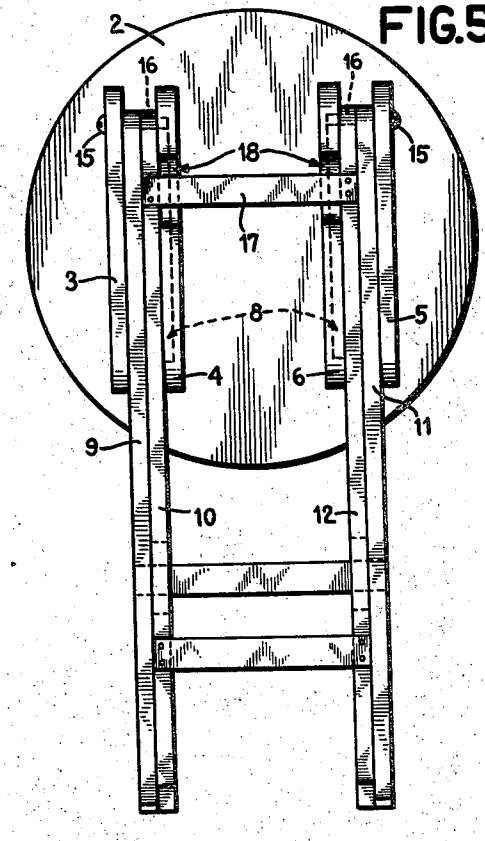


FIG.6.

FIG.7.

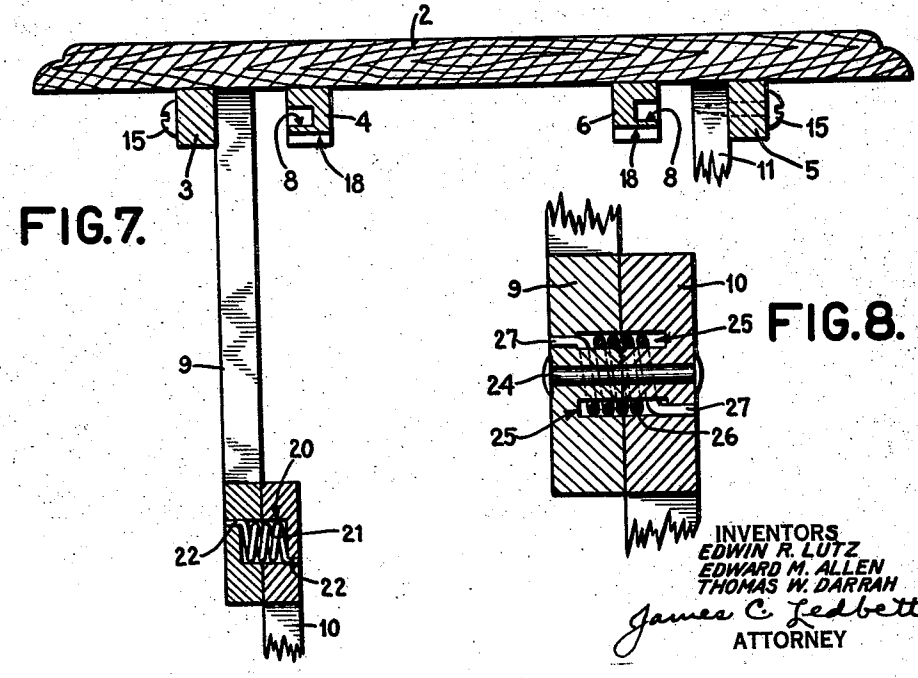


FIG.8.

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FOLDING TABLE

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2 Claims. (Cl. 311—83)

This invention relates to furniture construction and more particularly to new and useful improvements comprising a sturdy and compact foldable utility piece, such as a stool or folding table and the like.

An object of the invention is to produce a foldable furniture piece which is suited to quantity manufacture, especially in wood, comprising a minimum number of parts arranged in pairs for simplicity in production assembly, and having collapsible or fold-up means enabling the legs thereof to swing upwardly into close fitting parallel position with the underneath surface of a top piece and between batten or cleat strips employed as supporting means for the legs.

Another object is to produce a folding table which may have spring-actuated legs adapted to open automatically when starting the unfolding of the table, whereby the legs quickly attain their normal fully open position and ready for use.

With the foregoing and other objects in view, the invention relates to the new construction and combination of parts arranged according to the novel principles and mode of operation and assembly as herein explained, as well as shown in the accompanying drawings illustrating a preferred form or examples of the invention, with its several uses and advantages, wherein:

Figures 1 and 2 show the table in fully open position, the two views being taken at right angles to each other.

Figure 3 shows an enlarged detailed view of the table in open position, being a section on the line 3—3.

Figure 4 shows the table in partially closed position, that is, both leg pairs are swung into parallel aligned position in a plane common to all four legs, preliminary to being completely folded, as in the next view.

Figure 5 is an underneath view and Figure 6 an edge view of the table fully collapsed and folded up ready to be stored out of the way.

Figures 7 and 8 show sectional views on a larger scale of modified forms of the table having spring-actuated legs to facilitate unfolding the table into operative or standing position, and Figure 3 may also be referred to in this connection.

Referring further to the drawings, a top piece 2 provides a supporting surface and it can be of any suitable shape and form so as to serve as a table, a stool, or other piece of furniture. Batten strips or cleats are arranged in pairs and secured in parallel position to the underneath side of the top piece 2. One pair of cleats 3 and 4 are placed at one side of the top piece and another pair 5 and 6 are placed on the other side thereof. The two cleats of each pair or set are spaced apart just enough to receive a pair of legs as later explained.

The two inner cleats 4 and 6 of each spaced pair is provided with a groove 8. Each groove 8 extends from end to end of its cleat but is closed at each end so that the groove forms a straight track formed longitudinally in each batten or cleat piece. The grooves are formed part way into the cleats and deep enough to act as tracks for guiding pins later described but do not cut through to form slots which would weaken or reduce the stiffness or rigidity of the cleats. Each cleat 4 and 6 has its groove 8 facing the outside non-grooved cleats 3 and 5.

Four table legs are arranged in pivoted pairs of the cross or X-type and are mounted in operative relation with the four cleats. One pair of cross legs 9 and 10 are carried between one cleat pair 3, 4, while another pair of cross legs 11 and 12 are carried between the other cleat pair 5, 6. The cross legs are pivotally connected in pairs between their ends by a pivot pin 13 to form the X-type leg assembly. This pivot 13 may be placed above the center of the legs so that their shorter portions are above the pivot so as to provide a little wider spread of the legs on the floor than at the upper ends thereof.

The upper end of each outside leg 9 and 11 is hingedly attached at one end of its respective non-grooved cleat 3 and 5 by a screw 15 or other suitable pivot means. This arrangement hinges or pivotally mounts the top end of each leg 9 and 11 to swing on the pivots 15 so as to fold these two legs against the top piece 2 and alongside their supporting cleats 3 and 5.

The upper ends of each of the other two legs 10 and 12 have guide pins 16 anchored therein and projecting from the side of the legs into the grooves 8. Thus the upper ends of the two inside legs 10 and 12 are slidably mounted on their respective cleats 4 and 6 in order that the axis of the guide pins 16 can be brought into alignment with the axis of the pivot 15.

A cross piece or stretcher bar 17 has its ends anchored to the two inside legs 10 and 12. This stretcher is located near the upper end of the legs proximate the guiding pins 16 to hold said legs and pins in operative alignment for smooth sliding action back and forth alongside the cleats 4 and 6 having the grooves 8 which face the non-grooved or plain cleats 3 and 5. The stretcher

bar 17 holds the guiding pins in place within their closed groove tracks 8. The bar 17 is mounted on the edges of the inside legs 10 and 12 which are adjacent to the legs 9 and 11, that is, the bar faces toward the legs 9 and 11. The stretcher brace 17 swings (Figure 4) into aligned position between the two outside legs 9 and 11.

A recess 18 is formed in the two inside grooved cleats 4 and 6 of a depth equal to the thickness of the bracing stretcher bar 17. This recess 18 does not communicate or cut into the grooves which therefore are left closed in order that the guiding pins 16 may not jump their track or get out of operating position. This arrangement confines the two guiding pins 16 within the two grooves 8 and makes a sturdy and fool-proof construction which will not come apart during the table folding or unfolding operation.

The two inside legs 10 and 12 carrying the stretcher bar 17 are readily slidable from one end of the grooved cleats 4 and 6 to the other end thereof until the axis of each guide pin 16 comes into alignment with the axis of the fixed pivots or leg hinges 15. When this position of all legs is reached they are all aligned in a common plane (Figure 4) and then may be folded downwardly into collapsed position (Figures 5 and 6) against the underneath surface of the top piece 2. In this final position, the stretcher bar 17 comes to rest in the recess 18 flush with the outer surface of each cleat 4 and 6.

Inasmuch as the recess 18 does not interrupt or communicate with the groove 8, it follows that the guiding pins 16 are confined in said grooves and cannot be displaced therefrom. The brace 17 across the two inner legs 10 and 12 tie them together and hold their guiding pins 16 in axial alignment during sliding action so that pins do not bind in the grooves 8. Thus the table easily folds into final position (Figures 5 and 6) by simply taking a hold of the lower ends of the open legs (Figure 1) and swinging them together (Figure 4), whereupon all four legs are then swung downwardly into final collapsed position, as aforesaid. The table is readily opened by reversing this operation until the guiding pins 16 come to rest at the far ends of the grooves 8 opposite the two hinge pivots 15.

A modified form of the pivotal leg construction is shown in Figure 7 (in so far as the leg pivots 13 heretofore described are concerned) which provides positive and quick leg opening operation. A cylindrical socket or recess 20 is axially formed in the adjacent faces of each cross leg 9 and 10, as well as in legs 11 and 12, as will be understood. A coil spring 21 is mounted in the aligned sockets 20, with both spring ends 22 anchored in apertures extending outwardly from the two sockets 20. The two spring ends 22 hold the two legs adjacent each other. This spring 21 is set into position with initial torque wound thereinto having an unwinding force sufficient to automatically throw the upper end of the two inside legs 10 and 12 from one end of the grooved cleats 4 and 6 to their other ends, that is, from Figure 4 position to Figure 1 position. In other words, the unwinding force of the spring 21 facilitates the opening or the unfolding of the table or stool legs so as to make the furniture piece ready to place upon the floor. It will be noted that the cylindrical body of the spring 21, coiled within the two close fitting sockets 20, not only acts as the pivot for the legs but also as the opening force for sliding the guiding pins 16 in the grooves 8. In closing the table, the two legs are swung together as heretofore described which loads the spring 21 for the next automatic unfolding operation.

In Figure 8, an automatic quick opening leg is also attained by a spring actuated pivot, but differing in structure from that shown in Figure 7. A pivot pin 24 secures the two cross legs 9 and 10 together in swinging relation and this pin is disposed through axially-aligned bosses formed by an annular groove 25 partway cut into each leg. The two annular grooves 25 axially face each other, and a coil spring 26 is confined within the grooves 25 with the spring ends 27 set into a recess leading outwardly from the bottom end of each annular groove 25. The spring 26 is set into position with sufficient initial torque wound thereinto as to impart opposite-direction rotation to the two legs 9 and 10 by which they automatically open once the table is partly unfolded from its Figure 6 position to Figure 4 position. Upon reaching the latter position, the unwinding force of the spring 26 pushes on the legs by driving them apart to fully open position as in Figure 1 until the guiding pins 16 stop at the far ends of the grooves 8.

In Figure 7, the coil springs 21 and 26 are shown in dotted lines and may be referred to as a side view of the table in connection with the detailed fragmentary views of both modified forms shown in Figures 7 and 8.

This invention is presented to fill a need for improvements in a folding table. It is understood that various modifications in structure, as well as changes in mode of operation, assembly, and manner of use, may and often do occur to those skilled in the art, especially after benefiting from the teachings of an invention. Hence, it will be understood that this disclosure is illustrative of preferred means of embodying the invention in useful form by explaining the construction, operation and advantages thereof.

What is claimed is:

1. A foldable furniture piece comprising a supporting member such as a top piece serving as a table or the like; parallel cleats secured to the underneath side of the top piece, two of which are grooved from end to end, and said grooves being closed at their ends and also formed partway only into the cleats; two X-type legs having their upper ends pivotally attached to the ends of two cleats, and two X-type legs carrying guiding pins at their upper ends and slidably retained in the grooves; a stretcher bar extending across from one leg to the other leg proximate the guiding pins to brace said legs in fixed position with each other in order that the guiding pins slide freely in their grooves, and a recess formed partway into each of the two grooved cleats proximate the ends thereof which carry the pivoted legs, said stretcher bar foldable down into the recess flush with the cleats simultaneously with the legs which also fold between and flush with said cleats.

2. A foldable furniture piece comprising a supporting member such as a top piece serving as a table or the like, four parallel cleats arranged in spaced pairs and secured to the underneath surface of the top piece, a groove formed from end to end in one cleat of each pair, each groove facing the adjacent non-grooved cleat; four legs arranged in pairs of X-type and carried by the four cleats, one leg of each pair having its upper end pivotally connected proximate one end of the non-grooved cleat and mounted between it

and the grooved cleat, a guide pin carried by the upper end of each of the other legs and slidably confined in each grooved cleat; each pair of legs being foldable against the top piece between their supporting pair of cleats, a cross stretcher bar secured proximate the upper ends of the two legs having the guide pins aforesaid and lying across the two grooved cleats when said legs are folded down between their cleats against the top piece, and a recess formed in each grooved cleat inwardly toward but not communicating with said grooves for the reception of the stretcher bar, whereby the legs nest flushly between the cleats with the stretcher bar nesting flushly across said cleats.

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