

March 8, 1938.

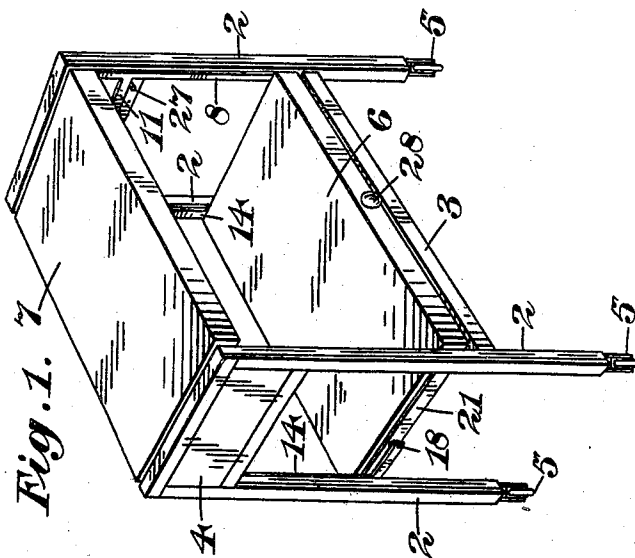
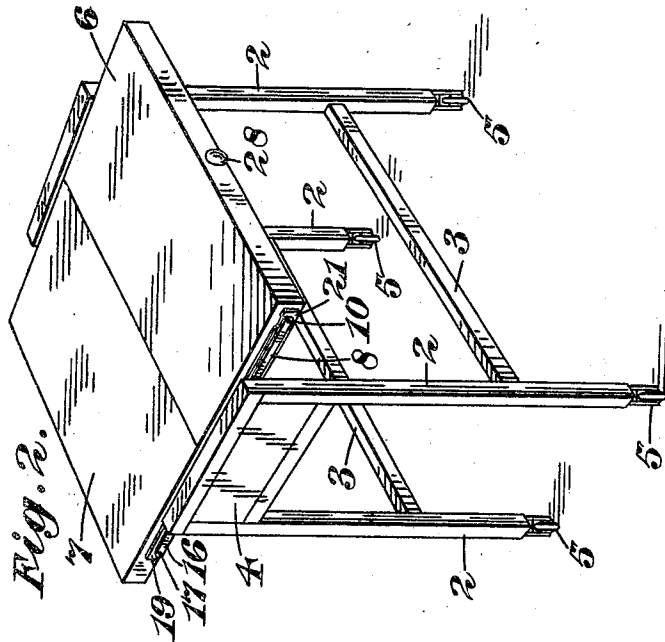
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2,110,466

CONVERTIBLE DINNER WAGON AND THE LIKE

Filed Jan. 28, 1937

3 Sheets-Sheet 1



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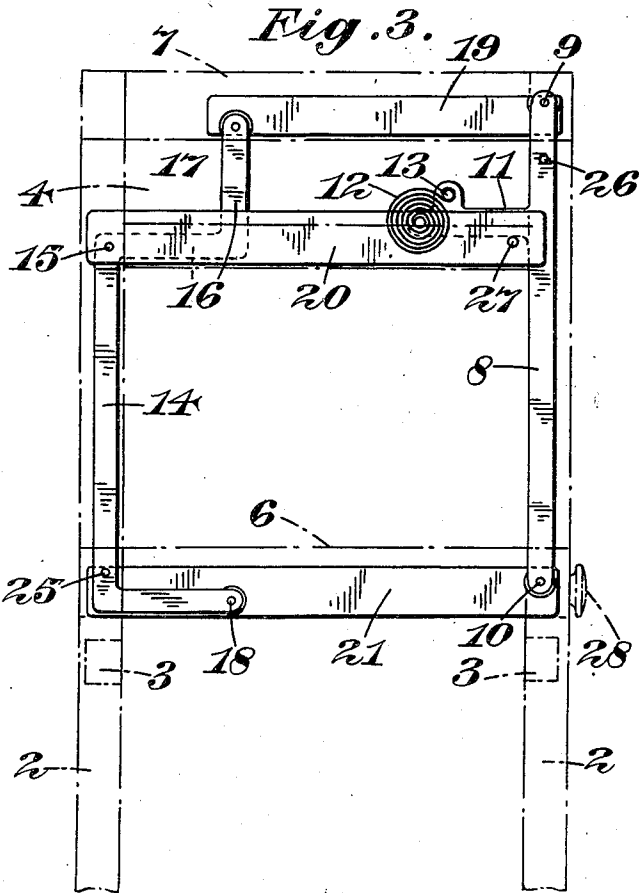
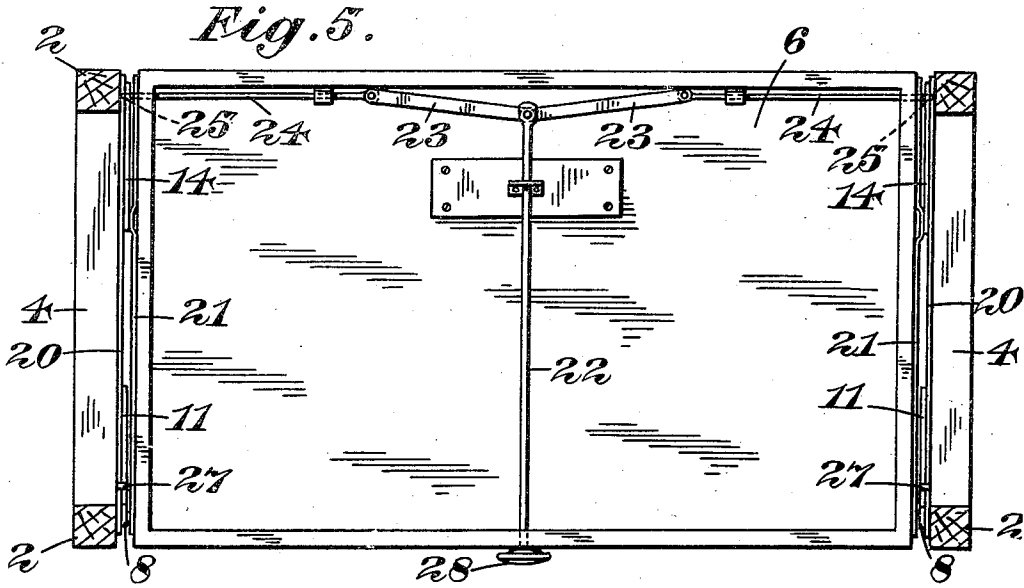
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CONVERTIBLE DINNER WAGON AND THE LIKE

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3 Sheets-Sheet 2



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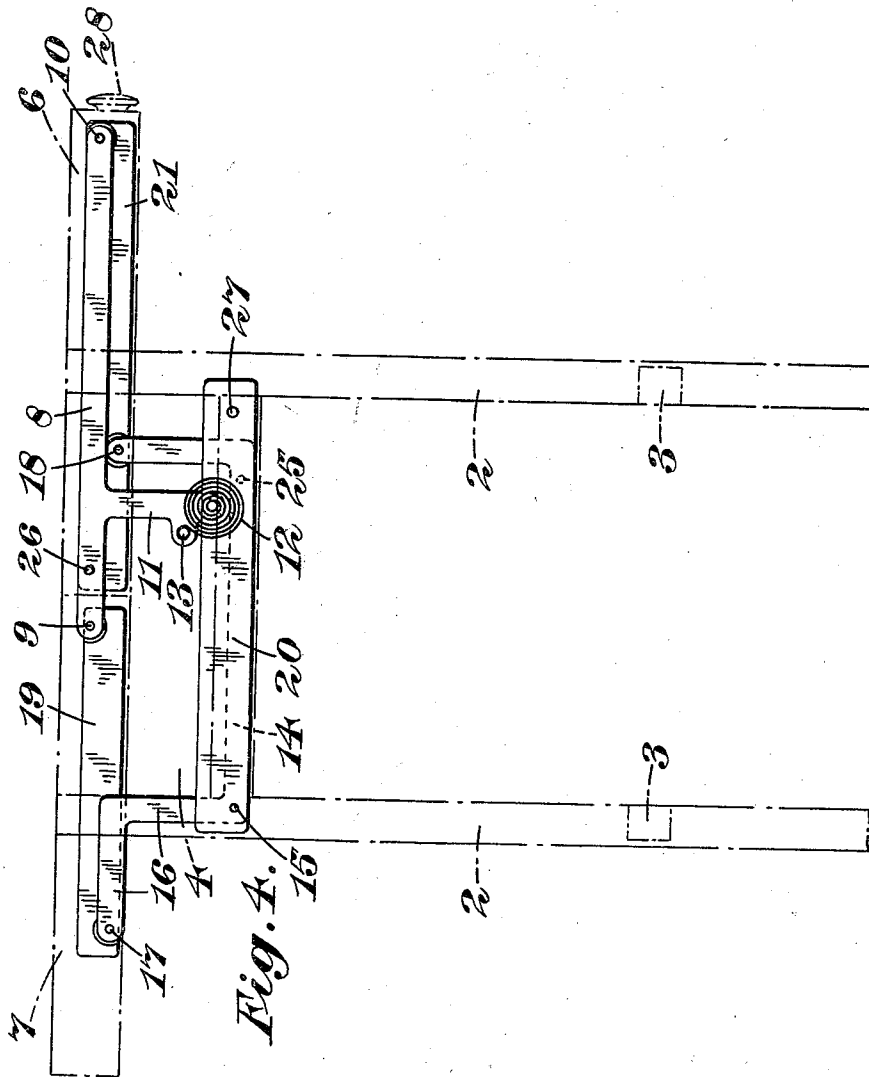
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CONVERTIBLE DINNER WAGON AND THE LIKE

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3 Sheets-Sheet 3



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# UNITED STATES PATENT OFFICE

2,110,466

## CONVERTIBLE DINNER WAGON AND THE LIKE

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In Great Britain February 13, 1936

6 Claims. (Cl. 211—2)

This invention relates to convertible dinner or tea wagons and like portable apparatus of the type comprising a rigid supporting stand (whereof the legs are usually equipped with castors) and mounted thereon a plurality of leaves which are interconnected by parallel-motion links in such manner that, by swinging movement of the links in relation to the stand, the leaves may be brought from a position (hereinafter referred to as the tier position) one vertically above another into a position (hereinafter referred to as the table position) in which they lie edge to edge alongside one another and constitute a single substantially flat shelf or table.

One object of this invention is to provide, in apparatus of the above type, a parallel-motion linkage so arranged and so articulated to the supporting stand that in the tier position of the leaves the top of the uppermost leaf will be substantially flush with the top of the stand, while in the table position the upper surfaces of both leaves will be substantially flush with the top of the stand.

A feature of the invention resides in the provision of a parallel-motion linkage (whereby each leaf is constrained to move parallel to itself when the leaves are brought from the tier to the table position and vice versa) which has its links pivotally connected to the supporting stand at points which are offset laterally from lines joining the pivotal connections between the links and the leaves.

Another feature of the invention consists in so shaping and arranging the individual links of the parallel-motion linkage that in the tier position the links will lie alongside the corner posts of the supporting stand or associated parts of it, and will thereby be more or less concealed from view.

An example according to the invention will now be described with reference to the accompanying drawings in which:—

Figure 1 is a perspective view of a dinner or tea wagon with the leaves in the tier position;

Figure 2 is a perspective view of the wagon with the leaves in the table position;

Figure 3 is an end view of the wagon with the corner posts and cross-piece at that end removed to show the linkage, the leaves being in the tier position;

Figure 4 is a view similar to Figure 3 with the leaves in the table position; and

Figure 5 is a view of the locking means for the leaves.

The supporting stand, which is in the form

of an open rectangular frame, comprises four corner posts 2 interconnected near their lower ends by rigid cross pieces 3. At each end of the stand the adjacent corner posts are in addition interconnected at their upper extremities by cross pieces of substantial depth 4, but at the sides of the stand there is no interconnection between the upper ends of the posts. The lower ends of the corner posts are furnished with castor wheels 5 so that when the leaf mechanism is in the tier position the apparatus may be used as a tea or dinner wagon for transporting purposes.

The adjustable leaf mechanism comprises two rectangular leaves 6, 7, each of approximately the same width and length as the corresponding cross sectional dimensions of the stand. The leaves are coupled together by two pairs of parallel-motion links disposed at opposite ends respectively of the leaves. The links are arranged and articulated to the stand in the following manner.

One link of each pair is a substantially straight link 8 pivotally connected at 9 and 10 to the two leaves near the corners thereof, and in the tier position the straight links lie, as to the whole of their length, alongside the corresponding corner posts of the stand as shown in Figure 3. The straight links are not connected directly to the stand but are furnished with short arms 11 which extend at right-angles to the length of the links in a direction towards the opposite corners of the leaves, and at their extremities 12 are pivotally connected to the cross pieces 4 of substantial depth which interconnect the corner posts of the stand at opposite ends of it respectively. It will be appreciated that the short arms of the straight links are located close to corresponding ends of the links, i. e. those ends which will be uppermost in the tier position of the apparatus. A pair of stiff spiral springs 13 are provided one at each end of the frame, one end of each spring being secured to the fixed pivot pin on which the corresponding arm 11 is rotatable and the other end of the spring being secured to a pin 14 on the arm. The springs are so arranged as to be stressed when the leaves are in the tier position and the purpose of the springs is to assist initially in the movement of the leaves from that position.

The other link of each pair (i. e. the link 14, hereinafter referred to as the cranked link) is pivotally connected at its opposite ends to the two leaves at points which are spaced apart inwardly from the corresponding corners of the leaves. Each cranked link is pivotally connected at 15 to the adjacent corner post of the stand.

The line joining the pivotal connections between the cranked link and the two leaves is parallel to the straight link, and the pivotal connection between the cranked link and the stand is offset laterally of this line in the same direction as the short arm 11 on the straight link 8. The cranked link is in two parts rigidly connected together or integrally formed, and comprising as to one part a small L-shaped piece 16, whereof the end of one limb is pivotally connected at 17 to the leaf which will be uppermost in the tier position, and the end of the other limb is pivotally connected to the adjacent corner post of the stand at 15, and as to the other part a long L-shaped piece having a long and a short limb, with the end of the long limb integral with or attached to the limb of the small L-shaped piece articulated to the stand, and with the end of the short limb pivotally connected to the margin of the leaf at 18. The arrangement of the cranked leaf is such that in the tier position, the long limb of the long L-shaped piece will lie alongside the adjacent corner post of the stand, while its short limb will lie alongside the edge of the lowermost leaf, and in the case of the small L-shaped piece one limb will extend alongside the cross piece at the upper end of the stand while the other limb will extend upwardly to its pivotal connection with the edge of the leaf. The straight and the cranked links are functionally equivalent, the special form of the cranked link being adopted in order to ensure that in the two position of the apparatus, no part of the linkage will stand proud of the margins of the stand and leaves. In the table position the two links at each end of the stand lie alongside each other and are hidden from view by the cross pieces 4 of substantial depth which interconnect the corner posts. The links are attached to the leaves and frames at their pivotal connections by metal plates 19, 20 and 21. The plates 19 and 21 are screwed to the upper and lower leaves respectively and the plates 20 are screwed to the cross pieces 4.

Any convenient device may be provided for locking the leaves in their two positions of adjustment. In the example shown in Figure 5 the locking mechanism comprises a bar 22 (whereof one end is accessible for manipulation at one side of the lower leaf and provided with a knob 28) which extends under the lower leaf at right-angles to its length and is interconnected by toggle levers 23 with rods 24 which extend lengthwise of the leaf, and at their extremities are movable through apertures in the marginal portions of the leaf into engagement with alternate holes in the links. In the tier position the locking rods are adapted to engage with holes 25 in the cranked links while in the table position they engage with holes 26 in the straight links.

Assuming the apparatus to be in the tier position with the top of the uppermost leaf flush with the top of the stand, it will be understood that when the leaves are swung into the table position, the upper leaf moves through a comparatively small arc, first rising above the stand and then dropping again into the flush position, while the lower leaf moves through a comparatively large arc, rising throughout, and it will further be understood that during this operation, and also when the leaves are reset to the tier position, each leaf is constrained to move parallel to itself. The foregoing result is obtained by arranging that the distances between the top-

most leaf 7 and the pivotal connections 15, 30 between the links and the stand (considering the leaves in the tier position shown in Figure 3) are equal to the distances through which these pivotal connections are offset from lines joining the pivotal connections between the links and the leaves. Further, in order to ensure that in the table position the two leaves will be symmetrical in relation to the stand, the distance aforesaid is made substantially equal to one quarter of the width of each leaf.

I claim:

1. A convertible dinner or tea wagon or like portable apparatus comprising in combination a rigid supporting stand, a plurality of leaves, and a parallel-motion linkage interconnecting the leaves and itself pivotally articulated to the stand to provide of swinging movement of the leaves between a tier position with one leaf vertically above another into a table position with the leaves lying edge to edge alongside one another, the linkage aforesaid comprising links which are pivotally connected to the leaves and are pivotally articulated to the stand at points offset from lines joining the pivotal connections between the links and the leaves.

2. A convertible dinner or tea wagon or like portable apparatus comprising in combination a rigid supporting stand formed by corner posts and interconnecting cross bars, a plurality of leaves, and a parallel-motion linkage interconnecting the leaves and itself pivotally articulated to the stand to provide of swinging movement of the leaves between a tier position with one leaf vertically above another into a table position with the leaves lying edge to edge alongside one another, the linkage aforesaid comprising links which are pivotally connected to the leaves and are pivotally articulated to the stand at points offset from lines joining the pivotal connections between the links and the leaves, and the links being so shaped and arranged that in the tier position they will extend, as regards a substantial portion of their length, alongside the corner posts of the supporting stand.

3. The convertible dinner or tea wagon or like portable apparatus claimed in claim 1 combined with a toggle lever locking device operable to lock the leaves in either the tier or the table position.

4. A convertible dinner or tea wagon or like portable apparatus comprising in combination a rigid supporting stand, a plurality of leaves, and a parallel-motion linkage interconnecting the leaves and itself pivotally articulated to the stand to provide of swinging movement of the leaves between a tier position with one leaf vertically above another into a table position with the leaves lying edge to edge alongside one another, the linkage aforesaid comprising links which are pivotally connected to the leaves and are pivotally articulated to the stand at points offset from lines joining the pivotal connections between the links and the leaves, the extent of the offset being equal to the vertical distance between the topmost leaf, in the tier position, and the pivotal connections between the links and the stand.

5. A convertible dinner or tea wagon or like portable apparatus comprising in combination a rigid supporting stand, two similar leaves of equal width, a parallel-motion linkage interconnecting the leaves and itself pivotally articulated to the stand to provide of swinging movement of the leaves between a tier position with one leaf verti-

5 cally above another into a table position with  
the leaves lying edge to edge alongside one an-  
other, the linkage aforesaid comprising links  
which are pivotally connected to the leaves and  
are pivotally articulated to the stand at points  
offset from lines joining the pivotal connections  
between the links and the leaves, the extent of  
the offset being equal to the vertical distance  
between the topmost leaf, in the tier position,  
10 and the pivotal connections between the links  
and the stand, and each being approximately  
one quarter of the width of a leaf.

6. A convertible dinner or tea wagon or like  
portable apparatus, comprising in combination a  
rigid supporting stand formed by four corner posts  
and inter-connecting cross bars, two similar  
leaves, a parallel-motion linkage comprising two  
5 pairs of parallel links pivotally connected to the  
stand at opposite ends thereof respectively and  
pivotally connected to the edges of the leaves,  
each link being pivotally articulated to the stand  
at a point offset from the line joining the pivotal  
10 connections between the link and the leaves.

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