

1,065,534.

Fig.1

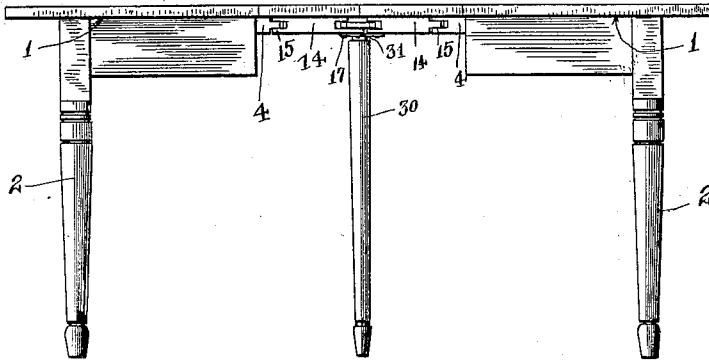


Fig. 2.

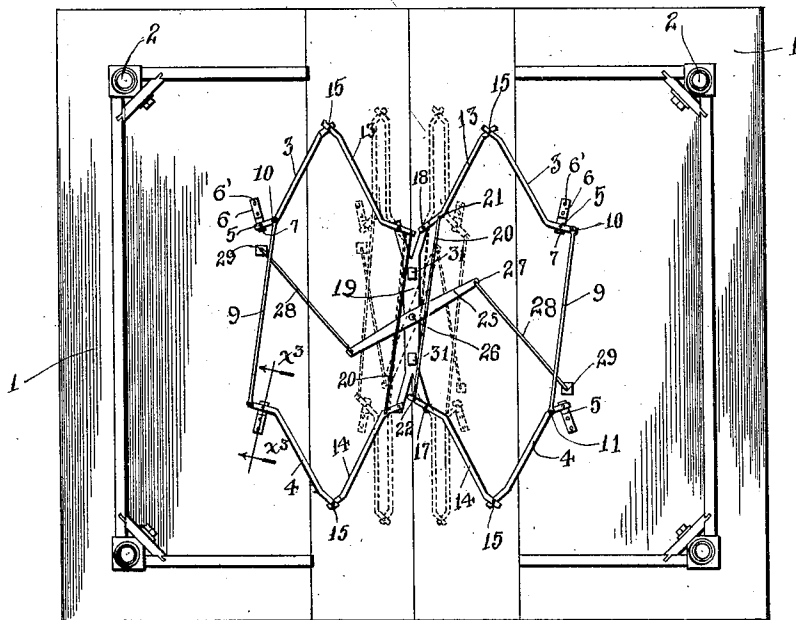


Fig. 3.

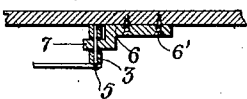
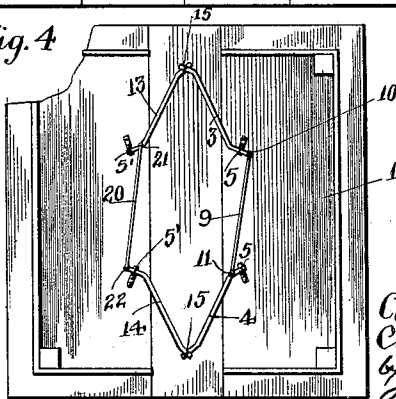


Fig. 4



Inventors
Charles Edward Lewis.
Charles Hinman.
by *John A. McClellan*

UNITED STATES PATENT OFFICE.

CHARLES EDWARD LEWIS, OF LOS ANGELES, AND CHARLES HINMAN, OF SOUTH PASADENA, CALIFORNIA.

EXTENSION MEANS FOR TABLES, &c.

1,065,534.

Specification of Letters Patent.

Patented June 24, 1913.

Application filed December 21, 1911. Serial No. 667,234.

To all whom it may concern:

Be it known that we, CHARLES EDWARD LEWIS and CHARLES HINMAN, citizens of the United States, residing, respectively, at Los Angeles and South Pasadena, in the county of Los Angeles and State of California, have invented a new and useful Extension Means for Tables, &c., of which the following is a specification.

This invention relates to tables or other devices comprising a plurality of members which require to be supported and connected in such manner as to enable them to be separated or brought together.

The invention is designed particularly for use in connection with extension tables and will be herein described in that connection. It will be understood, however, that it is also applicable to other devices such as benches and extensible devices generally.

The main object of the present invention is to provide means for maintaining the two parts of an extension table in parallel position during their extension or approach, without the use of slides.

A further object of the invention is to provide extension means for the stated purpose which will be movable to different positions with the minimum of frictional resistance.

A further object of the invention is to provide an extension means for tables, etc., which will be without any looseness in its action, so that the parts of the table will at all times be held firmly in proper relative position.

Other objects of the invention will appear hereinafter.

The accompanying drawings illustrate embodiments of the invention, and referring thereto:

Figure 1 is a side elevation of an extension table, embodying the invention in partly extended position. Fig. 2 is an inverted plan view of said table, showing in dotted lines, the collapsed position of the extension frame. Fig. 3 is a vertical section on line x^3-x^3 in Fig. 2. Fig. 4 is an inverted plan view of a different form of the invention.

The table comprises two end members 1, each provided, for example, with two legs 2, said leg members being connected together by an extension frame hereinafter described,

so as to be movable toward and from one another. The extension frame comprises two levers 3, 4, pivotally connected to each member 1 by pivot joints or hinges 5, preferably comprising plates or blocks 6 of metal secured to the bottom of the table member 1, as by means of screws 6', and having an extension 7 connected to the lever 3 or 4 by the hinge support 5. The levers 3 and 4 are connected by a tie rod 9 pivoted to lever 3 at one side of the pivot 5 by pivotal connection 10, and pivoted to lever 4 at the other side of said pivot 5 of said lever 4, by pivotal connection 11. Two other levers 13 and 14 are pivoted respectively to levers 3 and 4 by pivots 15, forming two toggles, one toggle consisting of levers 3 and 13 and the other toggle consisting of levers 4 and 14, said levers 13 and 14 being also connected by pivots 17 to a bar 19. A connecting link or rod 20 is pivoted at 21 to lever 13 at one side of the pivot 18 for said lever, and is also pivoted at 22 to the lever 14 at the other side of the pivot 17 of said lever 14.

In order to insure that the two members 1 of the table move simultaneously and to equal extent, connecting means may be provided consisting of a lever 25 pivoted at 26 to the bar 19 and connected by pivot 27 at its ends, to links or tie rods 28 which are pivotally connected at their outer ends at 29, to the respective table members 1. In case a central leg or pedestal is used, it may be connected to intermediate member 19, said leg indicated at 30, having portions 31 straddling the central lever 25 and secured to bar 19.

The operation is as follows: When the table is in closed position, the extension frame consisting of levers 3, 4, 13 and 14, and rods 9 and 20, occupies the position shown in dotted lines in Fig. 2, with the said bars and levers extending substantially in parallelism, and close together. In this position the two members 1 of the table are in contact at their inner edges. When it is desired to extend the table, the two members 1 are drawn apart by pulling thereon, and in this operation the extension frame opens out to position, for example, shown in full lines in Fig. 2, the levers 3, 13, 4 and 14 turning on their supporting pivots 5 and their connecting pivots 15, and the connecting rods 9 and 20 operating to enforce cor-

responding motions of the two pairs of levers 3 and 13, 4 and 14, so that the members 1 are caused to move in such manner that they remain parallel to one another at all times, and the extension frame being wholly of metal, there is no yielding or looseness of the parts. In the above described operation, the connecting mechanism consisting of the lever 25 and rods 28, causes the two members 1 of the table to move away from the central member 19 to the same extent, so that the said central member is maintained in central position at all times. This is of especial importance where a center leg or pedestal is used. When the table members 1 have been separated in this manner, fillers, indicated at 32 may be inserted, giving a continuous top for the table.

The several levers 3, 13, 4 and 14 are formed with flat tops, all in the same plane, so as to give a bearing or rest for the fillers 32 when the latter are in place, the said tops of said levers extending close under the top members 1 of the table, so as to support the fillers level with the table top.

The toggles extend and flex in opposite directions and each arm of the lever which is between the pivots 5, 6, 17 or 18 on the table member and the pivot 15 connecting the said arms, is bent and the connecting rods 9 and 20 are connected at one end to this bend on one side of the pivots 6, 5, etc., and at the other end to the toggle lever on the other side of said pivot, the said connecting rods crossing over from one side to the other of a line drawn between the pivots 5 or between pivots 17 and 18. The effect of this crossing over of the connection rods is to prevent relative movement of the table members in a direction transverse to the axis of extension, and we have found that in order to provide for this movement, it is necessary to bend the levers as stated, or at least offset the pivots so that the connection of the rod to one of the levers of the opposite pair of toggles is off of the line joining the two pivots for that lever, it being only by means of this offset of the pivot for the rod that the motions in curvature of the levers compensate for one another so as to admit of the extension of the toggles without cramping or binding.

It will be noted that in the construction above described, there are two extension elements, respectively connecting the intermediate member with the members 1. Any desired number of such elements may be used according to the length of table or device desired, for example, in case of tables which are without any center leg or pedestal, and particularly in case of smaller tables, the con-

struction may be simplified as shown in Fig. 4, where a single extension element is provided instead of the double construction shown in Fig. 2. In this case, the levers 3, 13, 4 and 14 and connecting links 9 and 20 are connected to one another as above described by pivots 15, 10, 11, 21 and 22. The said levers 3 and 4 in this case are connected to one of the members 1 by pivots 5 and the levers 13 and 14 are connected to the other table member 1 by pivots or hinges 5'. In this case also, the levers 3, 13, 4 and 14 and their connecting links 9 and 20 form a parallel motion device which maintains the members 1 of the table in parallelism throughout their movement.

In addition to its use in connection with a table or similar article, the extensible device or frame herein described is applicable for other purposes, for example, brackets or carriers such as package carriers or trunk carriers for bicycles or automobiles.

What we claim is:

1. The combination of two members to be extended, toggles connected to said members and extending and flexing in opposite directions, and rods connecting each lever of each toggle with the opposite lever of the opposite toggle, the pivotal connection of said rods to the respective levers being on opposite sides of the line connecting the pivots of the line extending between the pivotal connections of said levers to the table members to which they are connected.

2. The combination of two members to be extended, toggles comprising levers pivotally connected together and pivotally connected to said table members, said toggles extending and flexing in opposite directions, rods connecting each lever of each toggle to an opposite lever of the opposite toggle, the connection of said rod to one of said levers being at the outer side of the pivotal connection of said lever to the table member, and the connection of said rod to the other of said levers being at the inner side of the connection of said lever to the table member and out of line with the line joining said pivotal connection of said last named member to the table member with the pivotal connection of said lever to the other lever of the same toggle.

In testimony whereof, we have hereunto set our hands at Los Angeles, California this 13th day of December, 1911.

CHARLES EDWARD LEWIS.
CHARLES HINMAN.

In presence of—
A. P. KNIGHT,
GLADYS RUSSELL.