March 7, 1944. W. P. DE SAUSSURE 2,343,537

FOLDING TABLE

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Fig. 1

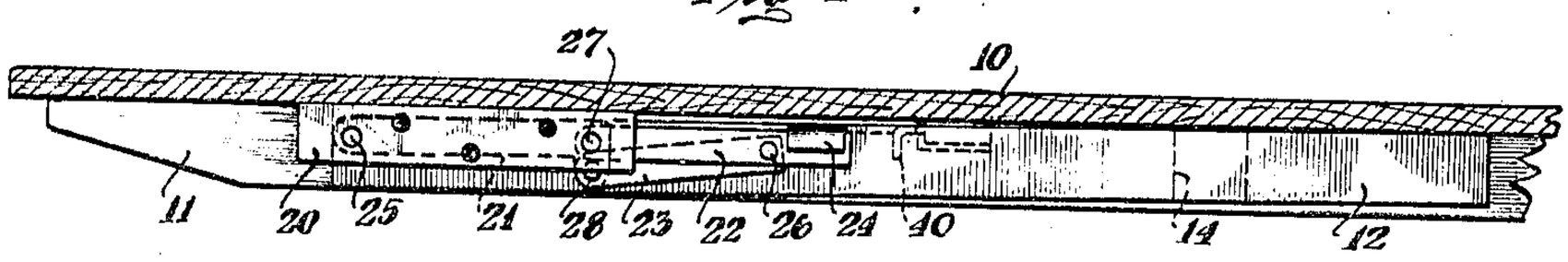


Fig. 2

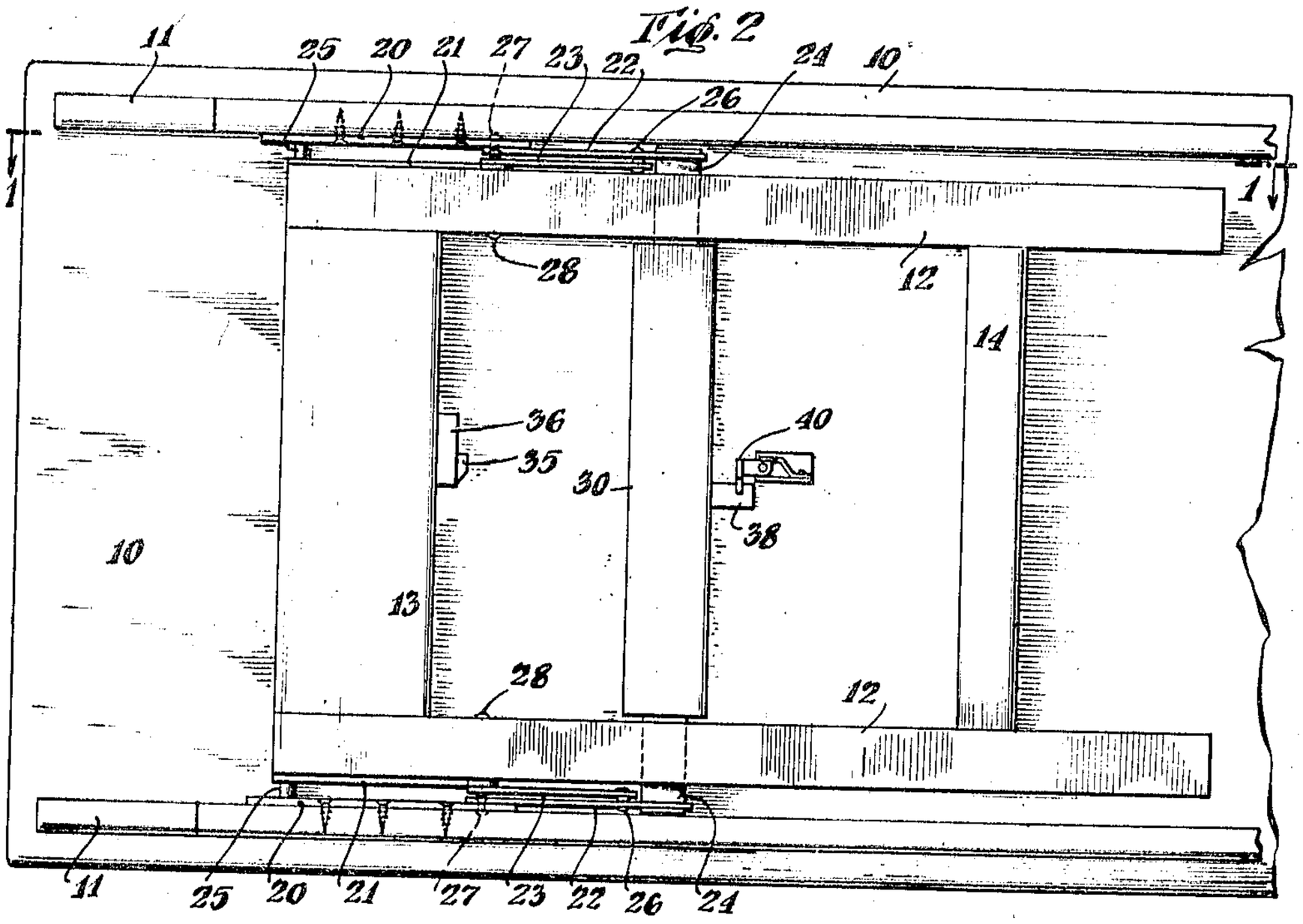
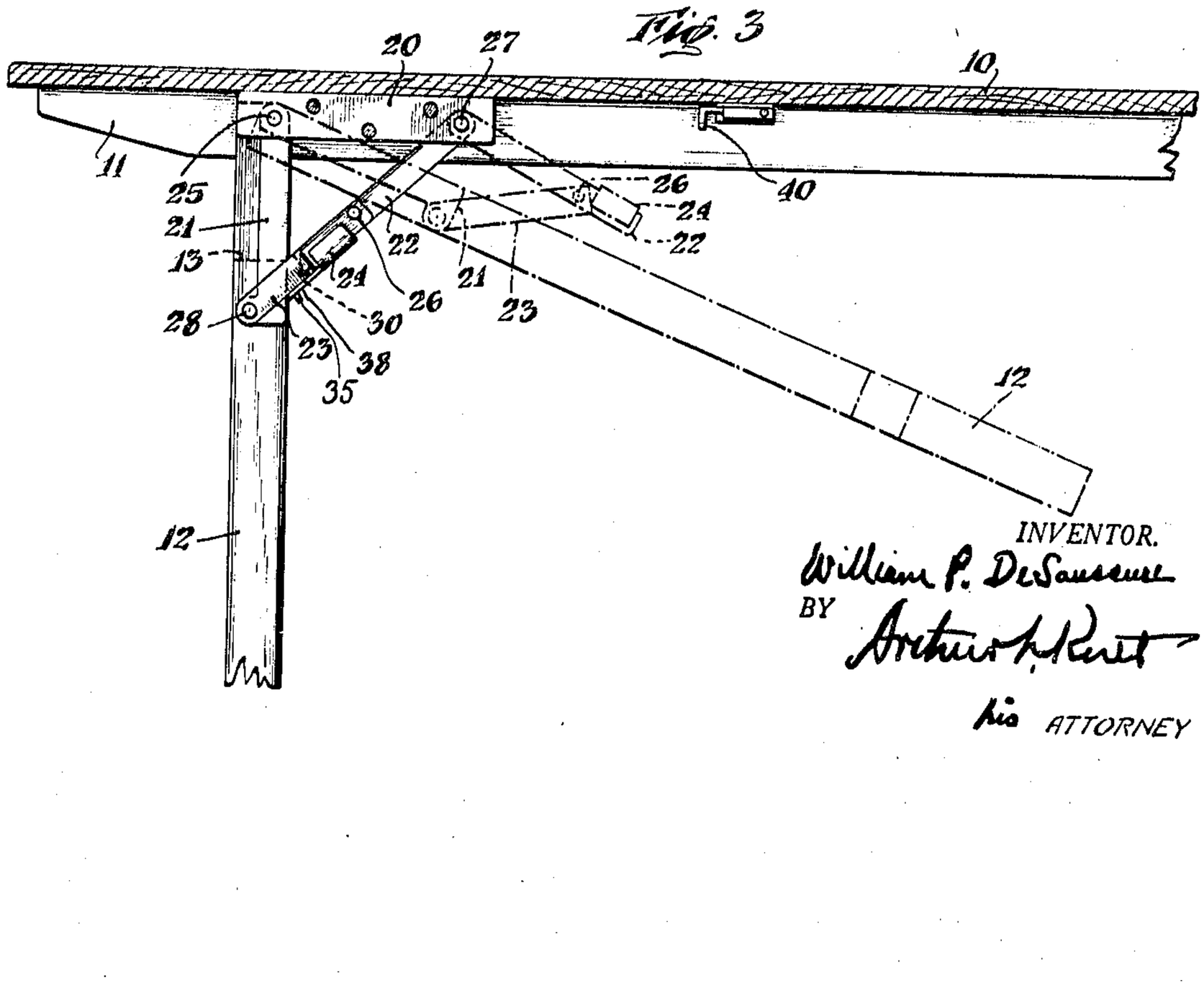


Fig. 3



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FOLDING TABLE

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Fig. 4

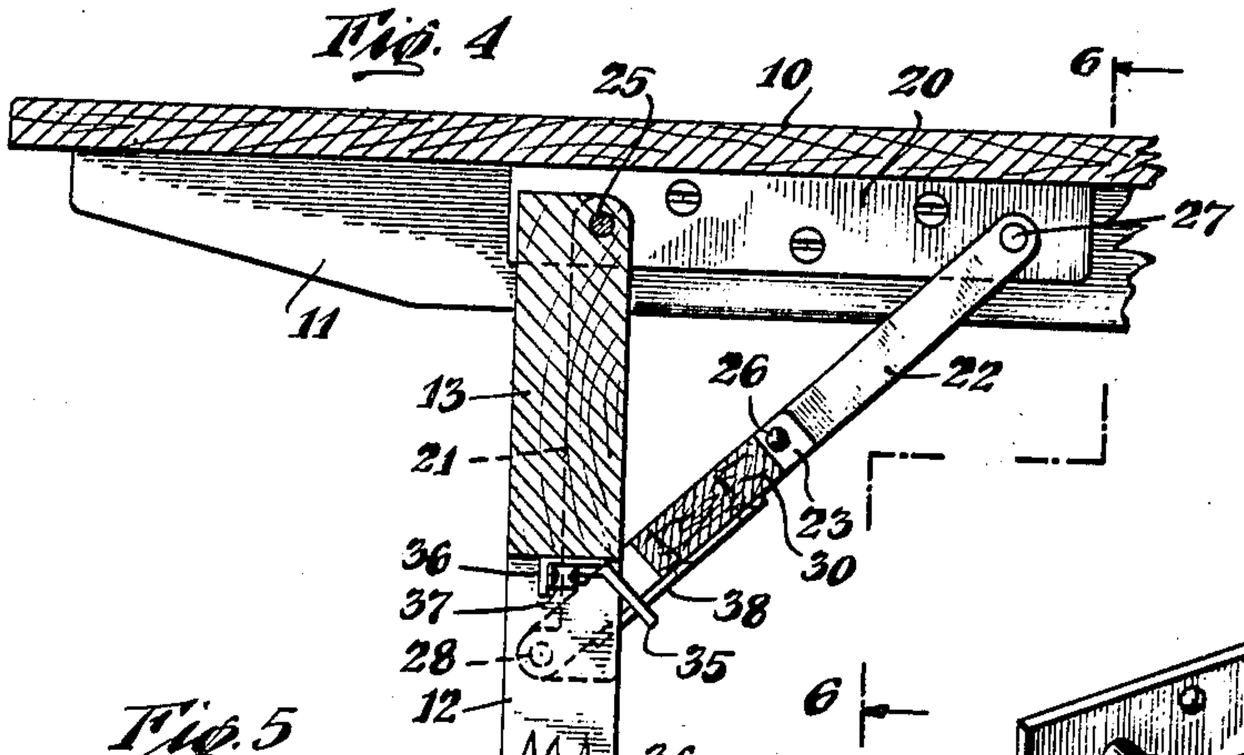


Fig. 7

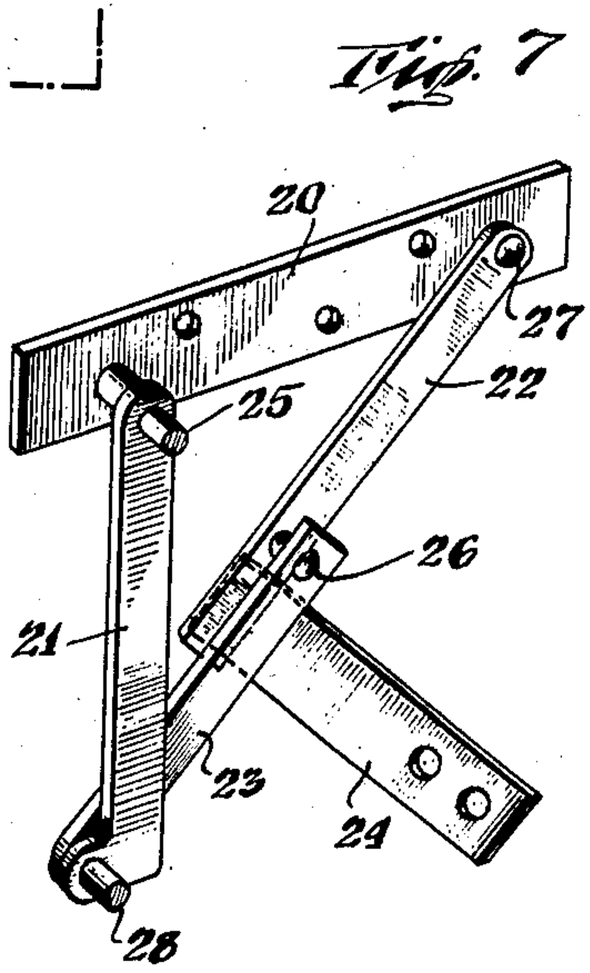


Fig. 5

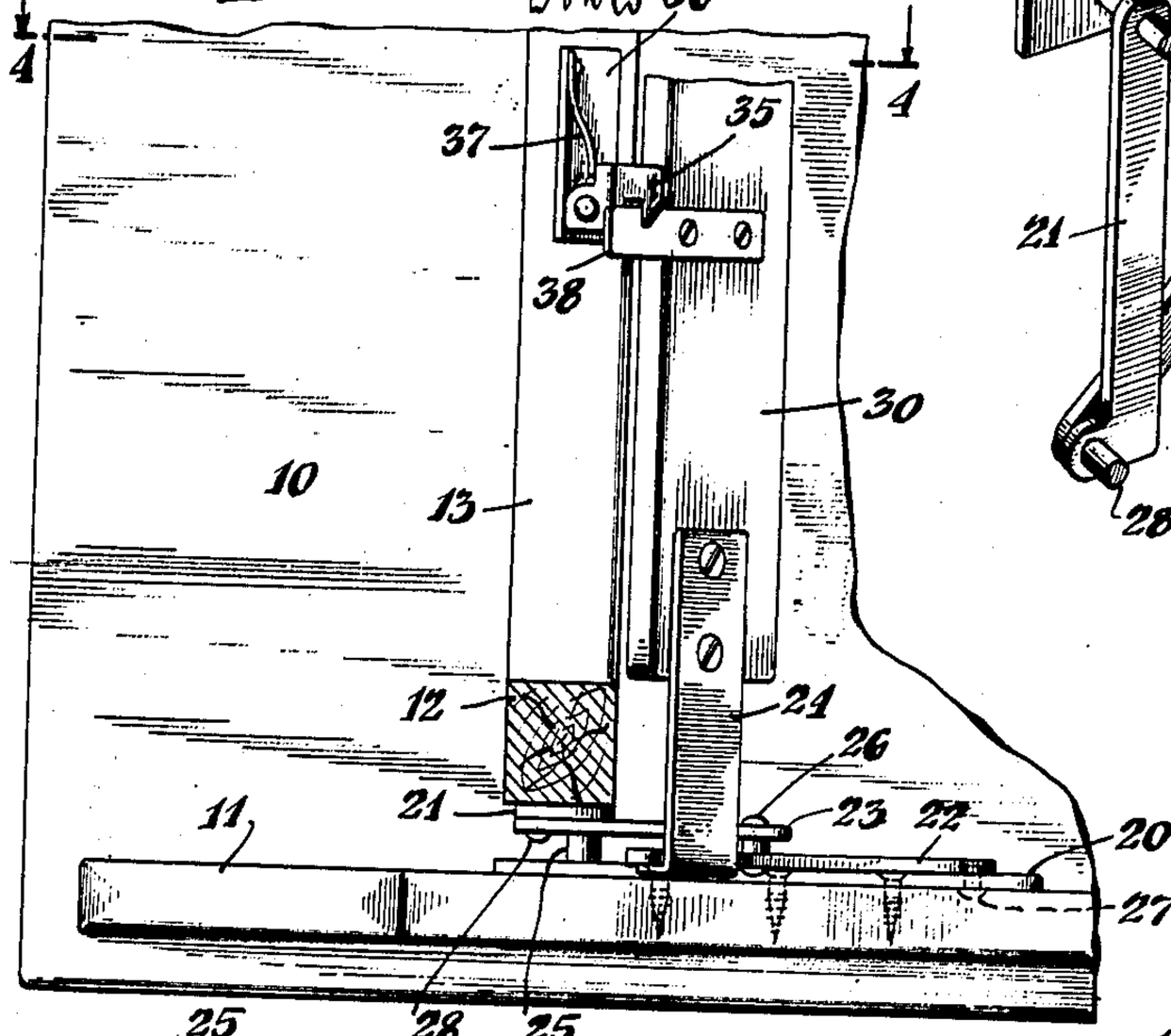
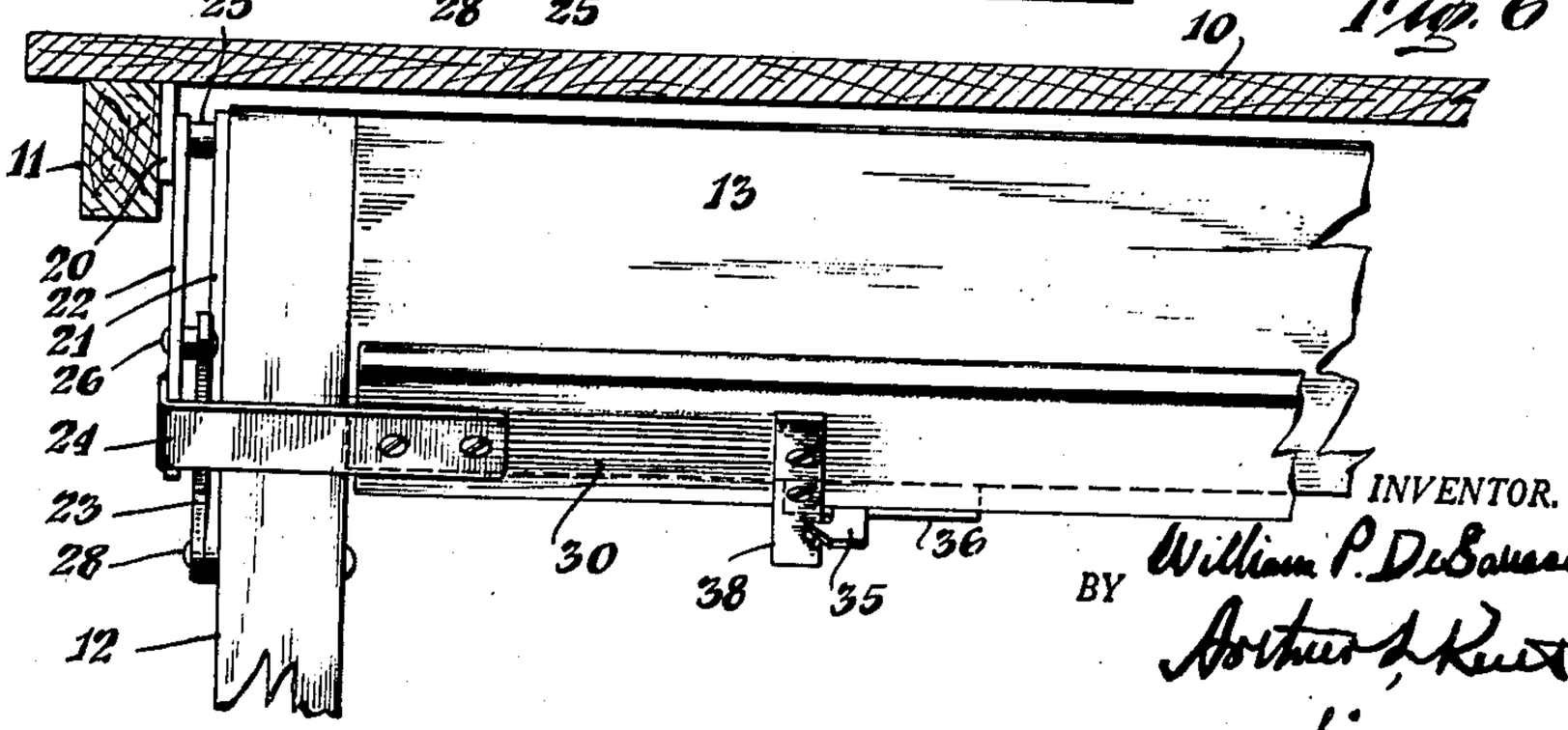


Fig. 6



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Patented Mar. 7, 1944 2,343,537

UNITED STATES PATENT OFFICE

2,343,537

FOLDING TABLE

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Application July 15, 1942, Serial No. 450,969

5 Claims. (Cl. 311—84)

This invention relates to folding tables, and more particularly to tables made in most part of wood or other suitable non-metallic material, although features of the invention are adapted for use in tables made of or mostly of metal.

The invention aims generally to provide an improved folding table of the kind in which the legs are connected in pairs which are pivotally connected to the table top to fold inwardly to lie parallel with the top, and aims to provide a construction which is positive and reliable in operation whereby when the legs are moved into extended, or set-up, position or into folded position they will be automatically locked securely. The invention aims further to provide such a table in which certain operative parts made of metal for strength and rigidity combined with compactness weigh only a small part of the weight of the whole table.

To these ends the invention consists in various features of construction, arrangement and combination of parts, all as will be hereinafter fully disclosed and then pointed out in the claims.

As a full understanding of the invention can best be given by a detailed description of a folding table embodying all the features of the invention in the form now considered best, such a description will now be given in connection with the accompanying drawings showing such a table. In said drawings:

Fig. 1 is a side view of one end portion of the table partly in section on line 1—1 of Fig. 2, the shown leg being in folded position;

Fig. 2 is a bottom plan view of such end portion of the table with the pair of legs shown in folded position;

Fig. 3 is a view similar to Fig. 1 but with the leg shown in extended, or set-up, position and, also, by dotted lines in an intermediate position;

Fig. 4 is a sectional view taken on line 4—4 of Fig. 5;

Fig. 5 is a bottom plan view on a larger scale than Figs. 1 to 3 of a part of the end portion of the table shown in Fig. 2;

Fig. 6 is a section of the part of the table shown in Fig. 5 taken on line 6—6 of Fig. 4;

Fig. 7 is a perspective view of one of the devices by which the legs are connected to the table top.

Referring to the drawings, the table illustrated has a top 10 and two side rails 11 extending lengthwise of the table, one near each side edge of the table top, and has two pairs of legs 12 (of which only one pair is shown in the drawings), the legs of each pair being connected by a top cross-piece 13 and a lower cross brace 14, each pair of legs being hingedly attached to the table top between the side rails 11, one near each end of the table. These main parts of the table shown are formed of wood or other suitable non-metallic material, but as stated tables embodying features of the invention may be made all of metal.

For pivotally connecting each pair of legs to the table top, a connecting device is provided at each side of the leg pair comprising two flat metal strips, or plates, 20 and 21, and a pair of metal toggle links 22 and 23, and a metal plate 24 which extends inward from the extended lower end of the upper link 22 at right angles to the link and to the plane in which the links move. The plate 20 of each such device is attached by means of screws or bolts to the inside face of one of the side rails 11, and the plate 21 is secured to the outer side of the adjacent leg at the upper end thereof. The pair of legs is pivoted at each side on a pivot stud 25 which extends from the plate 20 through an opening in the upper end of the plate 21, and into the wood of the leg if the leg extends all the way to the top of the plate 21 as shown. The two toggle links 22 and 23 are pivotally connected by a knuckle pivot 26, and the upper link 22 is pivotally connected at its upper end at 27 to the plate 20, and the lower toggle link 23 is pivotally connected at its lower end at 28 to the plate 21. The spacing of the pivots 27 and 28 from the main pivot 25 and the length of the toggle links 22 and 23 are such that when the leg is in its fully extended or set-up position, as shown in Figs. 3 and 4, the toggle links will be in locking alignment, and that when the toggle is broken and the leg folded upward until it lies against the table top, the toggle links will lie close together as shown in Figs. 1 and 2. The plate 24 is spot welded or otherwise rigidly secured to the link 22.

The upper toggle links 22 on opposite sides of the pair of legs are connected by a cross bar 30 rigidly secured to the inwardly extending plates 24. This cross bar is, in a wooden table, most desirably of wood, being secured at its opposite ends to the two opposite plates 24 by means of screws or bolts. It should be of substantial weight to serve as a momentum bar to carry the toggle links into locking position when the legs are swung out to extended position as hereinafter explained. The cross bar also serves to make the toggles on opposite sides of the pair of legs move in unison, and makes possible the locking of the pair of legs in extended position by a single conveniently located latch.

The links **22** are on the outer side of the links **23**, and the plates **24** extending from the lower extended ends of the links **22** may thus serve as stops for engaging the edge of links **23** when the upper and the lower links have by movement of the legs to their extended position been brought into alignment and most desirably when the knuckle pivots have moved just slightly beyond dead center. When the legs on being swung outward from the table top come to the extended position, the momentum of the somewhat heavy cross bar **30** serves to complete the straightening of the toggle links, but most desirably to carry the knuckle pivot of the links slightly beyond dead center. The toggles limit the movement of the legs and when in their straightened position hold the pair of legs in the extended position. This straightened position of the links is shown in Figs. 3 and 4, where the knuckle pivot **26** is shown as having moved slightly beyond the line connecting the link pivots **27** and **28**, that is, beyond dead center.

When the pair of legs come to their extended position, they are automatically locked in position by a locking device which holds the cross bar **30** to the leg cross piece **13**. A latch device suitable for this purpose is shown, comprising a pivoted spring latch **35** pivoted to a plate **36** secured to the under side of the cross piece **13**, the latch being urged to its holding position by a leaf spring **37**. A latch bar **38** is secured to and extends from the cross bar **30** in position to engage and move over the cam edge of latch **35** as the pair of legs approaches extended position and the cross bar swings toward the cross piece **13**, and as these parts reach their final positions the latch snaps over the bar and thus in cooperation with the toggles securely locks the legs. The inertia of the momentum cross bar **30** overcomes the resistance of the latch.

To release the legs for swinging them back to their folded position, it is only necessary to throw the latch **35** against the pressure of its spring **37** to release the cross bar **30** and then pull on the latch bar **38**, or on the cross bar, to break the toggles. The legs may then be folded in to lie against the table top.

When the legs reach folded position, they are automatically locked by a spring latch **40** on the under side of the table top engaging the latch bar **38**. The latch **40** may be, as shown, similar to the latch **35**. Instead of automatically acting spring latches, manually operated locking devices may, obviously, be provided for holding the cross bar **30** to lock the legs in extended and folded positions.

The word "table" as used herein is to be understood as including such short legged tables as benches, or long seats.

What is claimed is:

1. The combination in a folding table, of a table top, a pair of legs with a connecting cross-piece hingedly attached to the table top, two pairs of toggle links the lower link of each pair being connected to one of the legs and the upper link to the table top, a cross-bar extending between the toggle links rigidly secured to the extended lower end of the upper link of each pair, and means for locking said cross bar to said cross-piece when the legs are in extended position.

2. The combination in a folding table, of a table top, a pair of legs with a connecting cross-piece hingedly attached to the table top, two pairs of toggle links the lower link of each pair being connected to one of the legs and the upper link to the table top, a cross-bar extending between the toggle links rigidly secured to the extended lower end of the upper link of each pair, a latch for locking said cross bar to said cross-piece when the legs are in extended position, and a latch for locking said cross bar to the table top when the legs are in folded position.

3. The combination in a folding table, of a table top, a pair of legs with a connecting cross-piece hingedly attached to the table top, two pairs of toggle links the lower link of each pair being connected to one of the legs and the upper link to the table top and the two links being connected by a knuckle pivot, a momentum cross-bar extending between the toggle links rigidly secured to a link of each pair adjacent to the knuckle pivot, a stop for limiting relative movement of the links when their knuckle pivots have moved to locking position, and a spring latch on said cross-piece for cooperating with a part on said cross-bar to lock the legs in extended position.

4. The combination with a table top having on its under side two wooden side rails extending lengthwise of the table one near each side edge of the table top, and a pair of wooden legs with a wooden connecting cross-piece, of two metal rail plates secured one to the inside face of each of the side rails, two metal leg plates secured one to the outer side of each of the legs of said pair of legs, the pair of legs being hinged to the table top by means of pivot studs extending between said rail plates and said leg plates, and two pairs of metal toggle links, the lower link of each pair being connected to one of the leg plates and the upper link of each pair being connected to one of the rail plates and the two links being connected by a knuckle pivot, a cross-bar extending between the toggle links rigidly secured to a link of each pair adjacent to the knuckle pivot, and means for locking said cross-bar to said cross-piece when the legs are in extended position.

5. A device for connecting a folding leg to a table top, comprising an elongated metal plate for attachment to the table top, an elongated metal plate for attachment to the upper portion of the leg pivotally connected at its outer end to the first said plate, a pair of toggle links the outer end of one of which is pivotally connected to the first said plate at a point spaced from the point of its connection to the second said plate and the outer end of the other of which is pivotally connected to the second said plate at a point spaced from the point of its connection to the first said plate and the two links being connected by a knuckle pivot, and a plate extending in fixed position from the extended knuckle end of one of the toggle links at right angles to the link and to the plane in which the links move, said plate serving as a stop for preventing continued relative movement of the links when their knuckle pivot has been moved to locking position just past dead center.

WILLIAM P. DE SAUSSURE.