July 18, 1939. P. ROSENBERG ET AL 2,166,195

TABLE CONSTRUCTION

Filed Nov. 13, 1937 2 Sheets-Sheet 1

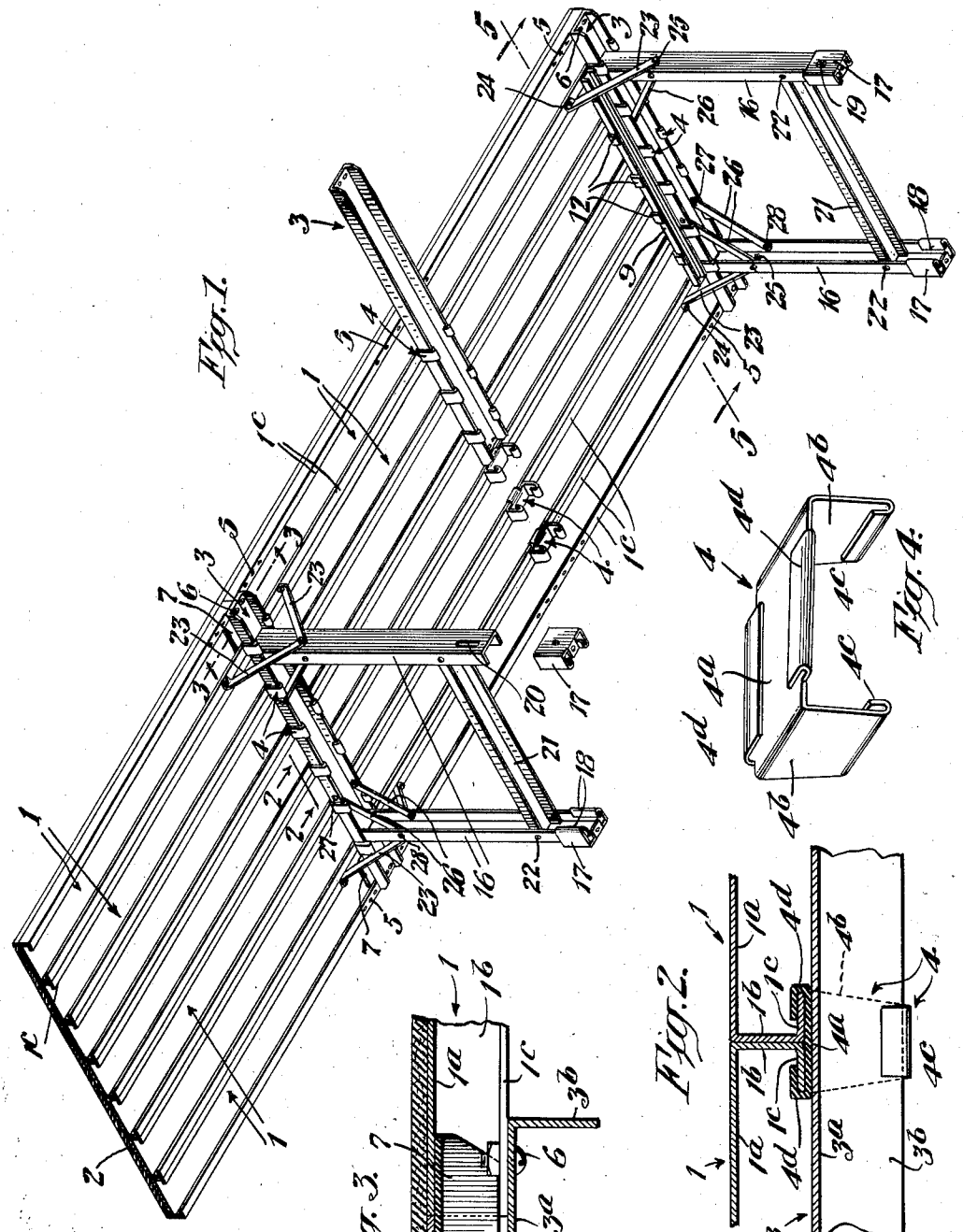


Fig. 1.

Fig. 4.

Fig. 2.

Fig. 3.

INVENTORS
Philip Rosenberg +
Emanuel Mically
By Davis & Davis
ATTORNEYS

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Fig. 5

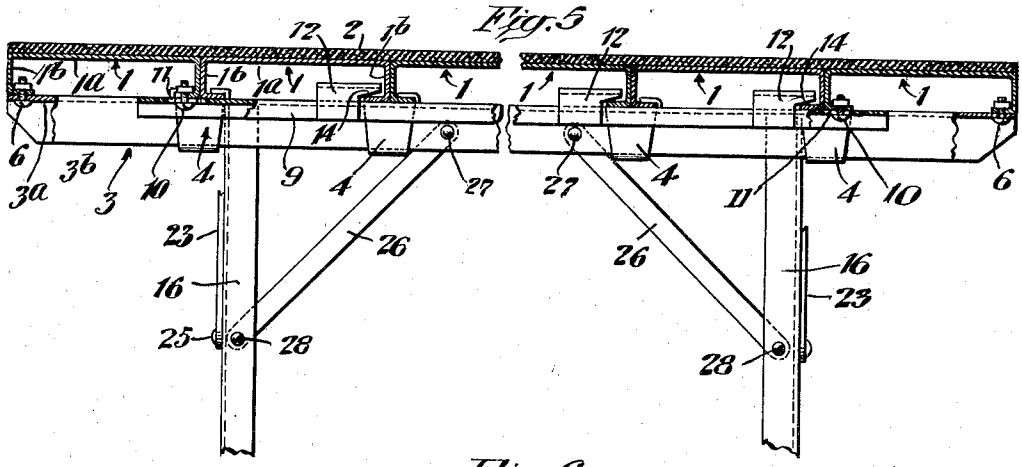


Fig. 6.

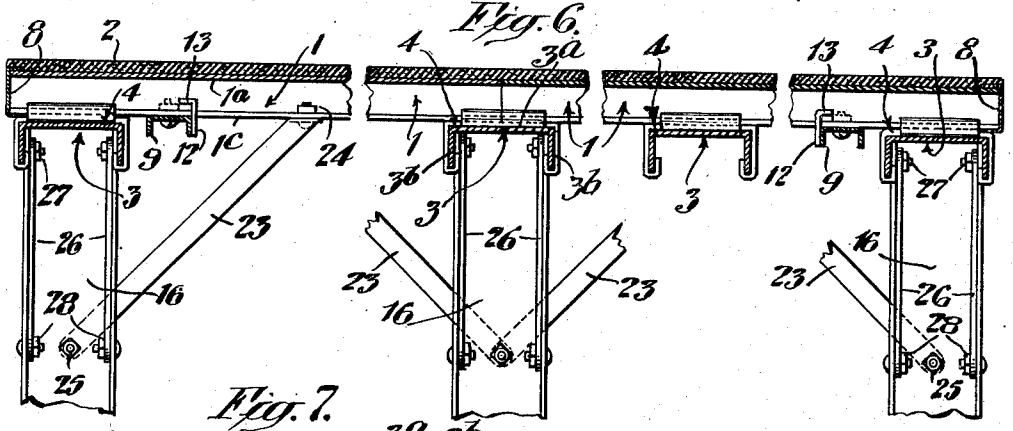


Fig. 7.

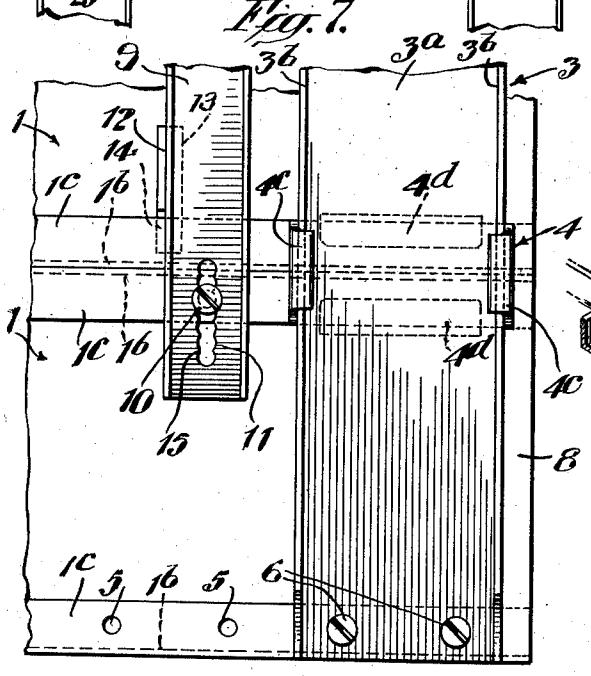
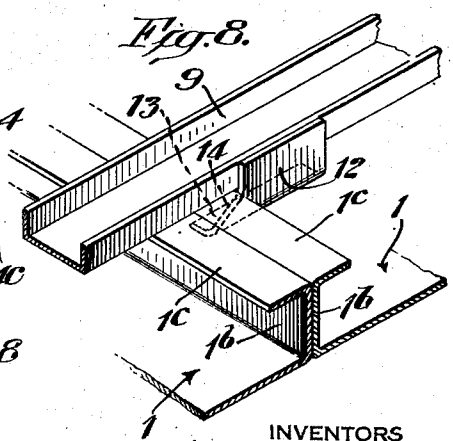


Fig. 8.



INVENTORS
Philip Rosenberg +
Emanuel Mically
By Davis Davis
ATTORNEYS

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TABLE CONSTRUCTION

Philip Rosenberg and Emanuel Mically, New York, N. Y., assignors to Universal Fixture Corporation, New York, N. Y., a corporation of New York

Application November 13, 1937, Serial No. 174,324

8 Claims. (Cl. 311—4)

This invention relates more particularly to improvements in work tables. Important objects of the invention are to provide an improved work table of the set-up and knock-down type; to provide such a table whose parts are designed for co-operation to hold them accurately positioned in the assembly; to provide a table designed to facilitate assembly and take-down of its parts and designed also for collapse into a very compact form for shipment or storage; to provide for readily varying the size of the table to suit the needs of its service; to provide such a table of improved sheet metal construction and with its parts designed to co-operate in the table assembly for great strength and durability; and to provide such a table requiring few bolts or like fastening elements to hold the parts assembled.

Other objects of the invention will appear hereinafter.

In the drawings, Fig. 1 is a sectional perspective view of the improved table, looking toward the under side thereof and showing one of the cross beams partly removed and the foot section of one of the legs detached;

Fig. 2 is an enlarged detail section on the line 2—2 of Fig. 1;

Fig. 3 is an enlarged detail section on the line 3—3 of Fig. 1;

Fig. 4 is a perspective view of one of the clips employed for anchoring together the longitudinal top-forming members and the transverse beams;

Fig. 5 is an enlarged transverse vertical section on the line 5—5 of Fig. 1, with parts broken away;

Fig. 6 is a vertical sectional view of the table taken along a longitudinal central line and with parts broken away;

Fig. 7 is a bottom plan view of a corner portion of the table top; and

Fig. 8 is an inverted fragmentary perspective view illustrating the action of the locking cam means upon the longitudinal top-forming members.

The table structure includes longitudinal top-forming members 1. These may be assembled in one or more sets according to the required length of the table. In the present instance there are two sets of said members arranged end to end. Each member is formed from a single strip of stiff sheet metal bent, along straight, parallel, longitudinal lines, into a channel form. The member has a flat body portion 1^a, vertically depending longitudinal side portions 1^b and laterally opposed inturned flanges 1^c at the lower edges of the side portions. The depth of the side portions is materially less than the width of the body portion, and the flanges 1^c lie in a plane parallel to the main portion. The member forms a wide, flat, inverted channel with said flanges at its lower edges. All of the members 1 are of the same cross sectional shape and dimensions and of the same length. They are arranged parallel and edge to edge in succession in a set, with their flat upper surfaces flush across the set. As shown the set may be covered by a stiff sheet 2 of fiber board or other suitable material and the latter may be secured to the set in any suitable manner.

Supporting beams 3 are arranged transversely beneath the members 1. When the table includes two end-to-end sets of the members 1 there will preferably be five of said cross beams located, two at the ends of the table top, one beneath the juncture of the sets and one between each end beam and the middle beam. When there is only one set there will preferably be employed three beams located, two at the opposite ends of the set and one at the middle of the set. Each beam is of channel form and made of a single strip of stiff sheet metal bent along straight parallel lines. The channel has a flat bottom portion 3^a and flat sides 3^b. All of the beams are of the same shape and size so that they are interchangeable in the assembly. They are arranged with their channels inverted and their flat portions 3^a in opposition to the under faces of the flanges 1^c.

A series of clips 4 are spaced along each beam 3. Each clip is formed from a single piece of stiff sheet metal. It has a flat, substantially rectangular body portion 4^a with downwardly bent leg portions 4^b at its opposite ends. At their lower ends the leg portions 4^b are bent inwardly and upwardly to form hook-like flanges 4^c. Along its opposite edges the body portion 4^a has margins bent inward to form hook-like flanges 4^d in lateral opposition. The clip is shaped and proportioned to straddle the beam 3, with the flat portion 4^a of the clip bearing against the upper surface of the portion 3^a of the beam, the leg portions 4^b bearing against the sides of the beam, and the clip flanges 4^c receiving the lower edges of the beam. The upper flanges 4^d are formed and arranged to receive the adjacent oppositely extending flanges 1^c of a pair of the members 1 which are in abutting relation, as shown in Fig. 2. The members 1 and the beam have sliding fits within the clip and the latter is formed to make substantial engagement with said elements. The flanges 4^c are of material length longitudinally of the beam and the flanges 4^d are of material length longitudinally of the members 1.

There is a series of the clips 4 spaced along each beam 3 and they anchor all of the top-forming members together in series across the table top and also anchor them to the beams 3. Each clip has its body portion 4a directly beneath the abutting edges of a pair of the adjacent members 1 and interposed between the upper side of the beam and the under sides of the oppositely extending flanges 1c of said adjacent members.

The beams 3 have bolt holes at their opposite ends, and the outermost top-forming members 1 have bolt holes 5 in their flanges 1c. These holes are spaced along the end portions of said flanges and also along a medial portion of the length of the flanges. Through said holes in the beams and in the flanges 1c the beam ends are bolted to the top-forming members 1, as at 6. When only one set of the members 1 is employed in the table both of the end beams are bolted in positions entirely beneath the end portions of the set. When however an additional set is employed to lengthen the table, one of the end beams is bolted in a position to underlie the abutting ends of both sets and provide support for both. The number and spacing of the holes 5 is such as to enable said end beam to be adjusted inward and outward to suit tables of different lengths. The bolt holes are provided at both ends of each set so that either end of a set may be joined to another set. At the joints between sets the outermost members of one of the sets bear short channel sections 7, fitted for half their length within said members 1 and secured in any suitable manner, as by spot welding for example. The projecting portions of said channel sections are fitted within the opposed end portions of the outermost members 1 of the other set. These channel sections serve to reinforce the outermost members 1 at their joints and keep the joints flush at the edges of the table. At the ends of the table top the ends of the channel members 1 are covered by sheet metal finishing strips 8 of channel form. As shown, the edges of said strips may be fitted, one between the cover sheet 8 and the upper edge margin of the set of members 1, and the other edge between the clips and the under sides of the members 1.

Provision is made for locking the members 1 of each set against relative longitudinal displacement. A channel bar 9 made of a single strip of stiff sheet metal is disposed crosswise beneath each set and is detachably held to the outermost members by bolts 10. The latter are passed through longitudinal slots 11 in the end portions of the bar and through holes in the inner flanges 1c of said outermost members 1. This mounting of the bar enables it to be shifted endwise across the set. Rigidly secured to an outer side of the bar, by welding or otherwise, is a series of spaced locking cam plates 12. These are also made of stiff sheet metal and each has a longitudinal edge turned over to form a reinforcing flange 13. At one end each plate has an inclined cam edge 14 and the cam edges of all the plates face downward and forward in the same direction along the bar. Each forms, together with the upper side of the bar, a V cleft to receive one of the flanges 1c. There is one cam plate for one of the flanges 1c of each member 1 exclusive of the outermost members of the set. The cam edges 14 are so disposed with reference to the opposed flanges 1c that by driving the bar in one direction said flanges will be engaged by the cam edges and cramped into tight binding engagement with the upper surface of the bar. This will simultaneously lock all of the members 1 engaged by the cam plates to the locking bar and hold them against endwise displacement relatively to each other. Since the outermost members 1 are held to the bar by the bolts 10 it is obvious that said members will also be held against endwise displacement in the set. In order to hold the bar against accidental slacking back or retraction from locking position the edges of the slots 11 have notches 15 for snap, holding engagement with the bolts 10. The bar may be driven endwise in the opposite direction to release the locking cams from the flanges 1c.

The table top structure just described is supported by legs 16. There are a pair of legs for each end beam 3 and a pair for the middle beam. Each leg is of channel form and made of stiff sheet metal. The legs of each pair are snugly fitted at their upper ends within the respective channel beam 3. Each leg has at its lower end an extensible section or foot 17 formed to fit around the channel cross section of the leg and hook around the edges of the leg as at 18. The foot is slidably adjustable along the leg to level the table and it is held adjusted by a bolt and nut connection 19. The bolt passes through a hole in the foot and through a vertical slot 20 in the leg. Above the feet a transverse brace in the form of a channel bar 21 made of a single strip of sheet metal connects the legs of each pair and is detachably bolted thereto, as at 22. At their upper ends the legs are braced by metal strips 23 obliquely arranged and detachably secured at their upper and lower ends, as at 24 and 25, to certain of the flanges 1c and to the legs respectively. Other similar brace strips 26, obliquely arranged in planes at right angles to the first strips, are detachably secured at their upper and lower ends, as at 27 and 28, to the sides of the beams 3 and to the sides of the legs respectively.

It will be seen that the invention provides a very strong and durable work table and one in which all of the parts with the exception of the few bolt connections are made of sheet metal. All of the sheet metal parts are designed for construction by simple manufacturing processes and they are designed also for both individual strength and mutual reinforcement. In the table top assembly the form and arrangement of the members 1, the beams 3 and the clips 4 are such that they cooperate to maintain the flat upper surfaces of the members 1 flush.

In setting up the table assembly the top-forming members 1 are arranged edge to edge in succession and the retaining flanges 4d of the clips 4 are engaged with the cooperating retaining flanges 1c of the members 1. The clips are then slid along the members 1 to aline them in properly spaced transverse series to receive the beams 3. The depending edges of the beams are engaged in the hook-like lower flanges 4c of the clips and the beams are slid through their respective series of clips and bolted at their ends to the outermost top-forming members 1. The locking bar 9 is attached to the set of members 1 by the screws 10 and driven endwise to lock said members to the bar. This completes the table top assembly. The supporting legs and their braces are finally assembled and secured in place. In taking down the table the posts may all be separated, or the top structure may be

left as a unitary assembly and the pairs of legs and their braces may also be left assembled after detachment from the top structure. The parts are all designed so that they will pack into a compact space for storage or shipment.

What we claim is:

1. A table top structure comprising a number of straight, parallel top-forming members, a beam beneath said members and disposed transversely thereof, clips to retain said top-forming members and beam assembled, and interlocking connections between said clips and the top-forming members and between the clips and the beam constructed and arranged to permit endwise sliding of said members and beam into and out of operative connection with the clips; a locking bar at the under side of the top-forming members and extending crosswise thereof, mountings for said bar borne by several of the top-forming members and adapting the bar to shift endwise, and locking cam means borne by the locking bar and engageable with the other top-forming members by endwise shift of the bar to lock the top-forming members to the locking bar against endwise shift relatively to each other.

2. A table top structure comprising a set of straight, parallel top-forming members of inverted channel form and having opposed inwardly extending retaining flanges along their opposite lower longitudinal edges, a beam of inverted channel form beneath said top-forming members and disposed transversely thereof, clips spaced along said beam and retaining said members and beam assembled and each having opposed hook-like retaining flanges hooked around said retaining flanges borne by adjacent edges of an adjacent pair of the top-forming members and hook-like retaining flanges hooked around the opposite lower longitudinal edges of the beam, said retaining connections between the clips, the top-forming members and the beam permitting endwise sliding of said members and the beam into and out of operative connection with the clips; and a locking bar disposed transversely beneath said set of top-forming members and mounted on the set for endwise shifting and having locking cams engageable with certain of said retaining flanges of the top-forming members upon endwise shifting of said bar to releasably lock said members to the bar against endwise shifting of the members relatively to each other.

3. A table top assembly comprising a plurality of straight, parallel top-forming members, and retaining means connected to said members to hold them against transverse displacement relatively to each other and permit them to shift endwise into and out of operative connection with the retaining means; and a locking bar disposed transversely of said members and borne by said assembly to shift endwise and having locking cam means engageable with the top-forming members by endwise shift of the bar to lock said members to the bar against endwise displacement relatively to each other.

4. A table top assembly comprising a plurality of straight, parallel top-forming members, and retaining means connected to said members to hold them against transverse displacement relatively to each other and permit them to shift endwise into and out of operative connection with the retaining means; and a locking bar disposed transversely of said members and borne by said assembly to shift endwise and having locking cam means engageable with the top-forming members by endwise shift of the bar to lock said members to the bar against endwise displacement relatively to each other.

5. An elongated knock-down table top structure comprising a plurality of similar sets of similar, separable top-forming members extending in the sets straight lengthwise of the table and flat at their upper sides and side by side in a common plane in each set, the sets being arranged in a common plane and with the top-forming members of the different sets in endwise opposed relation, a plurality of crossbeams underlying and spaced along the sets and one thereof medially located to underlie the opposed ends of the sets, a plurality of clips spaced along each of said beams and transversely retaining together in series the said top-forming members overlying the beam and also retaining them down upon the beam, the clips along said medially located beam being common to the opposed sets and retaining the said members of each set to each other in series and the members of the opposed sets to the beam, and releasable fastening elements securing the end portions of each of said beams to the outermost ones of the overlying top-forming members, the said clips, beams and top-forming members being constructed and arranged for endwise sliding detachment of the beams and top-forming members from the clips after release of said beam-fastening elements, for separation of the top-forming members, the beams and the clips.

6. A table top structure according to claim 5, characterized in that each of the said top-forming members comprises an inverted channel beam having opposed inturned retaining flanges along its lower edges, and each of the said clips comprises a body interposed between a side-by-side pair of said top-forming members and one of the said beams and having hook-like flanges slidably interlocked with the adjacent oppositely turned retaining flanges of said pair of members.

7. A table top structure according to claim 5, characterized in that each of the said top-forming members comprises an inverted channel beam having opposed inturned retaining flanges along its lower edges, each of the said beams comprises an inverted channel to receive therein the upper end of a supporting leg structure, and each of the said clips comprises a flat body interposed between a side-by-side pair of said top-forming members and one of said beams and having hook-like flanges slidably interlocked with the adjacent oppositely turned retaining flanges of said pair of members, and said clip body also has depending hook-like flanges slidably interlocked with the lower edges of the underlying channel beam.

8. An elongated knock-down table top structure comprising a plurality of similar sets of similar, separable top-forming members extending in the sets straight lengthwise of the table and flat at their upper sides and side-by-side in a common plane in each set, the sets being arranged in a common plane and with the top-forming members of the different sets in endwise opposed relation, a plurality of crossbeams underlying and spaced along the sets and one thereof medially located to underlie the opposed ends of the sets, a plurality of clips spaced along each of said beams and transversely retaining together in series the said top-forming members overlying the beam and also retaining them down upon the beam, the clips along said medially located beam

being common to the opposed sets and retaining the said members of each set in series to each other and the members of the opposed sets to the beam, and releasable fastening elements securing the end portions of said beams to the outermost ones of the overlying top-forming members, the said clips, beams and top-forming members being constructed and arranged for endwise sliding detachment of the top-forming members from the clips after release of said beam-fastening elements, for separation of the top-forming members and the beams.

PHILIP ROSENBERG.
EMANUEL MICALLY.