

L. S. LACHMAN.
METAL STRUCTURE.
APPLICATION FILED SEPT. 15, 1914.

1,308,083.

Patented July 1, 1919.
2 SHEETS—SHEET 1.

Fig. 1.

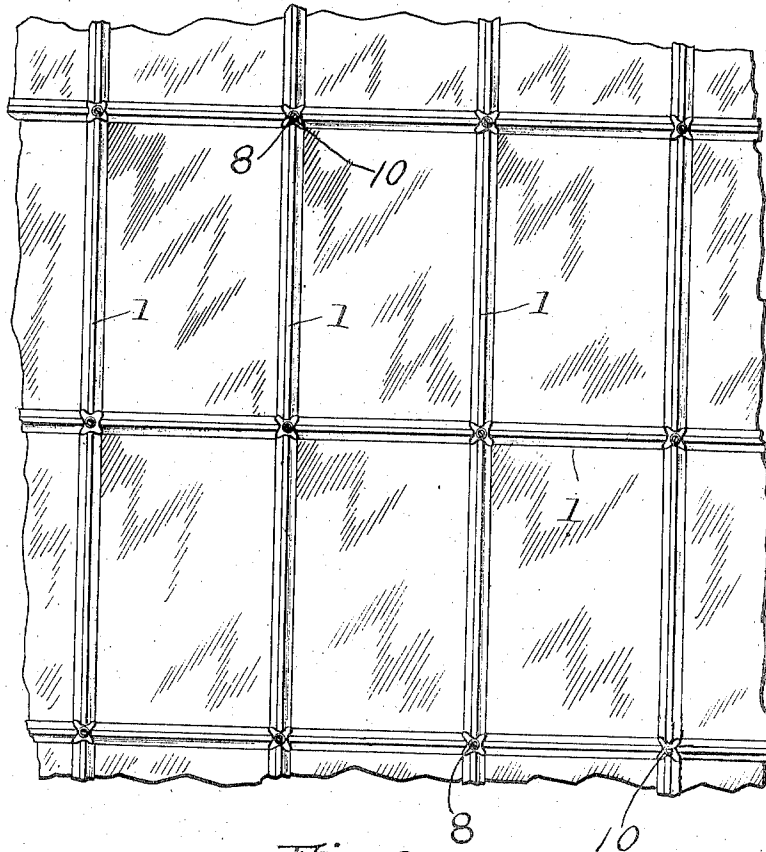


Fig. 2.

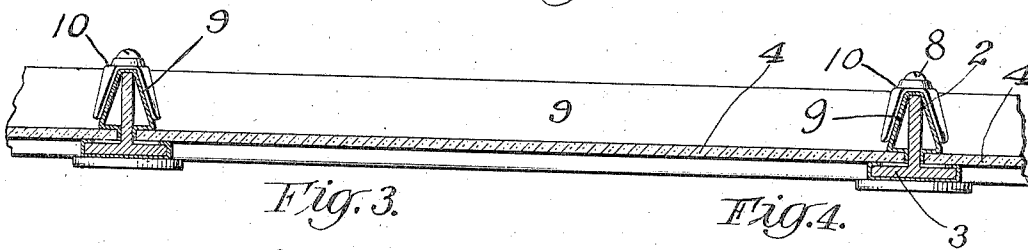


Fig. 3.

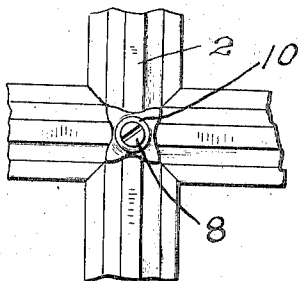


Fig. 4.

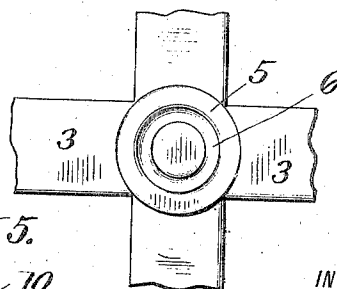
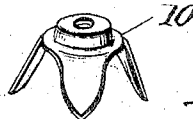


Fig. 5.



WITNESSES
F. H. Townsend.
Rene Lepoint

INVENTOR
Laurence S. Lachman.
BY
Tommaso & Sucke
ATTORNEYS.

1,308,083.

Patented July 1, 1919.
2 SHEETS—SHEET 2.

Fig. 6.

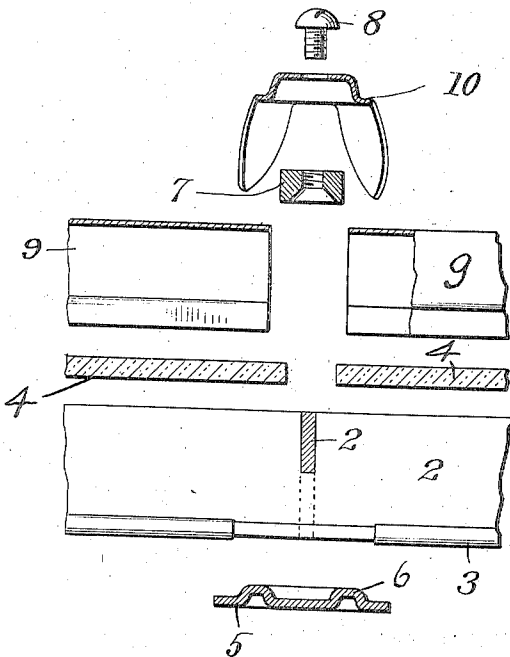


Fig. 7.

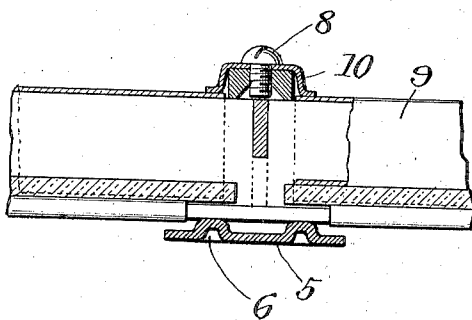


Fig. 9.

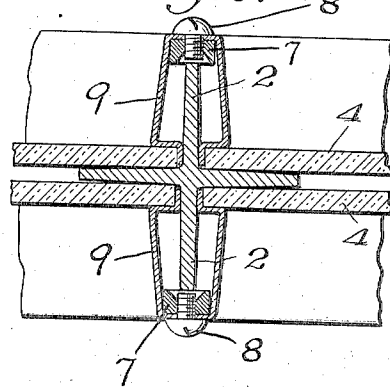


Fig. 10.

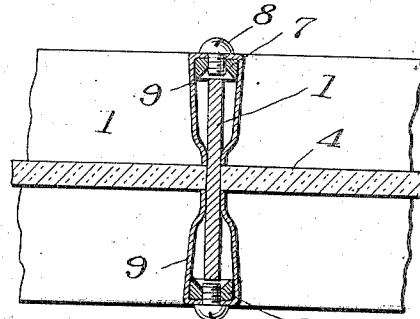
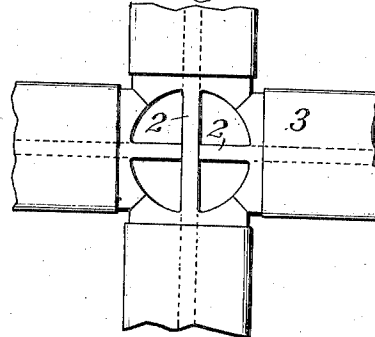


Fig. 8.



WITNESSES

W. J. Townsend
Gene Leikowitz

INVENTOR

Laurence S. Lachman

BY

Thomas Decker
ATTORNEYS

UNITED STATES PATENT OFFICE.

LAURENCE S. LACHMAN, OF NEW YORK, N. Y., ASSIGNOR TO UNIVERSAL ELECTRIC WELDING COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

METAL STRUCTURE.

1,308,083.

Specification of Letters Patent.

Patented July 1, 1919.

Application filed September 15, 1914. Serial No. 861,747.

To all whom it may concern:

Be it known that I, LAURENCE S. LACHMAN, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Metal Structures, of which the following is a specification.

My invention relates to metallic structures and particularly to the construction of metal frames composed of metal bars suitably secured together at the intersections or crossings.

The invention is especially useful for metal frames divided into sections by the crossing metal bars of which it is composed and designed to afford means for supporting plates or panels of glass or other material filling the spaces in the frame.

My invention relates, among other things, particularly to the means for securing the members of the frame together at their intersections, crossings or corners and likewise to the means for securing the panel in the frame.

One of the objects of the invention is to permit the parts of a metallic structure to be fastened together by a welded piece which may be conveniently used also for the ready attachment and detachment of another part or piece as for instance a fastening screw used to hold a panel in place in a frame.

This part of the invention involves the provision of a nut or threaded button welded to a support whereby another member or part may be secured to the support, the welding being effected without disturbing or mutilating the thread of the nut.

The object of the invention is also to attain cheapness of manufacture and facility of assembling parts of metallic structures as well as, in frame manufacture, ease of assembling the panel in the frame or removing it from position.

To these and other ends, which will be apparent to those skilled in the art from the subjoined description, my invention consists in the details of construction and combination of parts hereinafter described and then specified in the claims.

Figure 1 is a plan of a multi-panel frame embodying my invention.

Fig. 2 is a vertical section of said frame on the line of two of the intersections.

Fig. 3 is an enlarged view in plan of one

of the intersections looking toward one side of the frame.

Fig. 4 is a plan of the reverse side of the frame at one of the intersections.

Fig. 5 is an enlarged view of the clip used on one side of the frame at the intersection.

Fig. 6 shows the various parts composing the frame and means at the intersections for fastening the panel, the parts being shown disassembled.

Fig. 7 shows the same parts assembled, but with the fastening buttons not welded.

Fig. 8 shows in plan the reverse side of the frame at the intersection with the bars cut away for interlocking but with the fastening button at the flanged side of the frame removed.

Fig. 9 shows in section at the intersection of the frame a modification in the form of the bar whereby the frame may be used for supporting a double panel, that is to say, two panels separated by an air space.

Fig. 10 is a similar view of another modification of my invention involving the use of rectangular instead of flanged crossing bars.

In the drawings the invention is shown as applied to frame construction in which the crossing members of the frame constitute the support or main structure for the other parts to be attached thereto but it will be understood that that part of the invention relating to the welding of a countersunk threaded nut or button to a support whereby other parts may be attached to the support is of general application and not limited to a support comprising intersecting members or strips.

1 indicates the crossing bars of the frame, each consisting, as shown in Figs. 1 to 7, of a web portion 2 and a flange portion 3, said flange being preferably a double flange, that is to say extending in opposite directions from the web portion to afford a ledge or support for a panel 4 on the opposite sides of the bar, as is required when the frame is a multipanel frame.

At their crossings or intersections the bars or members of the frame are interlocked by notching each from the meeting edges, and the notching or removing of material including also the flange or ledge so as to bring the crossing members into the same plane when interlocked, as well understood in the art.

The cutting away of the flange portion is

shown in the Fig. 8, the welded button which fastens two of the bars together at the flanged side of the frame being in this figure removed.

5 5 indicates a welding button or piece composed of a ridged disk or plate of metal adapted to rest by the ridge 6 upon the flanges 2 at the intersection of the bars and to afford, at the crossing of the flanges by the ridge, points or locations for the electrical welding of the button to the bars at their intersections, thereby fastening the members of the frame together on one side of the frame, as well understood in the art.

The construction of the frame itself as so far described has been heretofore devised by me and forms the subject of my prior Patent No. 1,100,247 dated June 16th, 1914.

20 Thin sheets of copper may be folded around the head of the T-bar as shown in Fig. 2 to protect the same against rust and form a finish.

7 indicates a welding button or piece welded to the bars at the intersections of the frame and to the free edges of the bars or of the web portions thereof. Said button constitutes a means by which the parts of the structure are secured together, for which purpose it engages the bars at their intersection and is welded to them. To permit said button or piece to be conveniently used for the ready attachment and detachment of any part or piece, as for instance the screw 8, said button or piece is formed with a screw thread, preferably an internal screw thread as shown, said button in effect constituting a nut which nut, by my invention may be the ordinary threaded nut of commerce suitably modified, as shown, by forming it with a countersink on the edge by which it is welded to the frame. Said screw 8 may, as will be hereinafter described, operate by means of its flanged head as a fastening or clamping screw but obviously it might constitute any other part or piece of a structure requiring to be detachably fastened to the structure. The countersinking of the nut at one side has two functions: first, it aids in the welding of the nut to the edges of the bars by reducing the amount of material where the nut engages said bar at the edge of the countersink, and secondly, the countersink prevents distortion or injury to the thread of the nut, which would occur in the welding operation if the threading extended clear through to the welding face thereof, and thereby avoids the necessity of tapping the welding pieces after they have been welded to the frame. Hence, as will be obvious, the nuts may be made in any nut-making machine in quantity, and after the countersinking of the same, which may be done before or after threading, may be applied and welded to the frame,—this

completing the operation of constructing the frame itself.

The interlocking of the members of the frame as described prevents their displacement in relation to one another longitudinally of the member, but their displacement out of plane with one another is absolutely assured by the welding button 7 cooperating with the welding button 6 applied at the flanged edge of the bar.

This manner of positively holding the bars against displacement and out of plane with one another makes it unnecessary to accurately gage the depth of the slot in the webs 2 where they are interlocked.

To hold the panel 4 in place retaining strips 9 of sheet metal are employed. These strips are preferably constructed to bridge or straddle the edge of the bar and to engage the panel by their depending edge or skirt, which latter is preferably for the sake of appearance as well as to give a yieldable spring seat for the panel turned in as shown clearly in Fig. 2 and Fig. 9. The retaining strips extend up to the intersections at their ends but are there engaged and held down against the panel preferably by the use of suitable pronged clips 10, the four prongs of which extend down preferably into the corners of the frame, although this is not necessary to my invention, while the base of the clip is adapted to rest upon the top of the button 7 and is fastened down thereto by the head of the screw 8, whose stem passes through an opening in the base of the clip to enter the nut. Obviously the countersunk fastening button and cooperating screw and clip might be arranged and threaded in various ways and cooperate in substantially the manner described to hold the retaining strips in place without departing from my invention.

In the modification of my invention illustrated in Fig. 9 the flanged bar has a double web 2, making in effect a bar of cross shape, two arms of which afford the supporting flanges or ledges for the panels, while two other arms in line with one another form webs, each adapted to locate and hold a panel against shifting in its own plane. Hence, as will be seen from the Fig. 9, a frame constructed from this shape of bar according to my invention may be used for holding two panels 4 separated from one another by a space as shown.

In the modification of my invention shown in Fig. 10 the bars composing the frame are simple flat bars whose faces are unprovided with flanges or ledges but which are interlocked at the intersections, as already described, by simply notching the bars at their crossing points. They are fastened at their intersections by the countersunk threaded buttons 7, as already described, and applied at opposite sides of the frame over

the intersections, each said button having a cooperating screw or similar fastening device 8 for holding a retaining strip 9 in place with the edge of its skirt or depending portion engaged with the panel 4. In this instance the panel is held on its opposite face by direct engagement of a retaining strip 9 therewith, instead of by a flange upon the bar cooperating with a fastening strip. In this instance, as will be obvious, one strip 9 fastened to one of the bars takes the place of a flange projecting from said bar.

What I claim as my invention is:—

1. A metal structure the parts of which are held together by a countersunk nut the threads of which terminate below the level of the edge of the countersink and welded to said parts by the edge of the countersink, said nut affording by its threaded part a means for the ready attachment or detachment of another part or piece and a screw cooperating with said nut.

2. A metal frame comprising flanged crossing members combined with nuts welded at their edge to said crossing members and permanently fastening the same together, said nuts affording, by their threaded part, a means for the ready attachment and detachment of another part or piece, and said nuts being countersunk on the face engaging the members as and for the purpose described.

3. A metal frame composed of flanged metal bars interlocked at their intersections and having their flanges cut away at the intersections to expose the webs, combined with fastening buttons welded to the exposed webs at the intersections and threaded metal buttons welded to the free edges of the webs at the intersections, the latter buttons being threaded, and fastening devices having screws for cooperating with the threaded part of said buttons, whereby the panel may be held in position upon the flanges.

4. In a metal frame composed of intersecting flanged metal bars the flanges of which form ledges to support a panel, the combination with said bars, of permanent fastening means welded thereto at their intersections for permanently fastening them together, continuous retaining strips bridging the free edges of the web portions of said flanged bars and adapted to engage the panel to hold the same in place upon the ledges and independent fastening means detachably secured to the permanent fastening means for removably fastening said retaining strips down upon the edges of the panels

to permit the removal of the panel without dismantling of the frame.

5. The combination with a frame the members of which consist of flanged iron bars interlocked at their intersections and adapted to afford by their flanges suitable ledges to support a panel, of threaded buttons welded to the bars at their intersections, retaining strips for holding the panel against the ledges and means detachably secured to the buttons and engaging the ends of the retaining strips to hold the same in place.

6. The combination with a frame composed of metal bars interlocking at their intersections and provided with ledges to afford a support for a panel, buttons welded to said bars at their intersections and to an edge thereof opposite the edge or portion provided with the ledge and serving to permanently secure said intersecting bars together, retaining strips for holding the panel down upon the ledges, clips at the intersections for holding the retaining strips in place and means detachably secured to the buttons for fastening the clips in place.

7. The combination with a metal frame composed of metal bars interlocked at their intersections and having ledges to afford a support for the edge of a panel, of fastening strips for holding the panel down upon the ledge, nuts welded to the edges of the bars at their intersections, detachable clips adapted to engage the ends of the retaining strips and suitable screws entering the nuts and adapted to hold the clips in place.

8. A metal frame consisting of bars interlocked at their intersections and permanently fastened together by buttons welded to the edges of the bars, combined with a panel mounted in said frame, retaining strips adapted to engage the panel and means detachably secured to said buttons for fastening the retaining strips in place.

9. The combination with a metal frame composed of metal bars interlocked at their intersections and fastened together by countersunk nuts welded to the edges of the bars by the edge of the countersink, retaining strips bridging the edge of the bars and adapted to retain the panel in position and screws cooperating with said nuts to hold the strips in place.

Signed at New York, in the county of New York and State of New York, this 11th day of September, A. D. 1914.

LAURENCE S. LACHMAN.

Witnesses:

F. B. TOWNSEND,
HENRY A. GENS.