

April 26, 1960

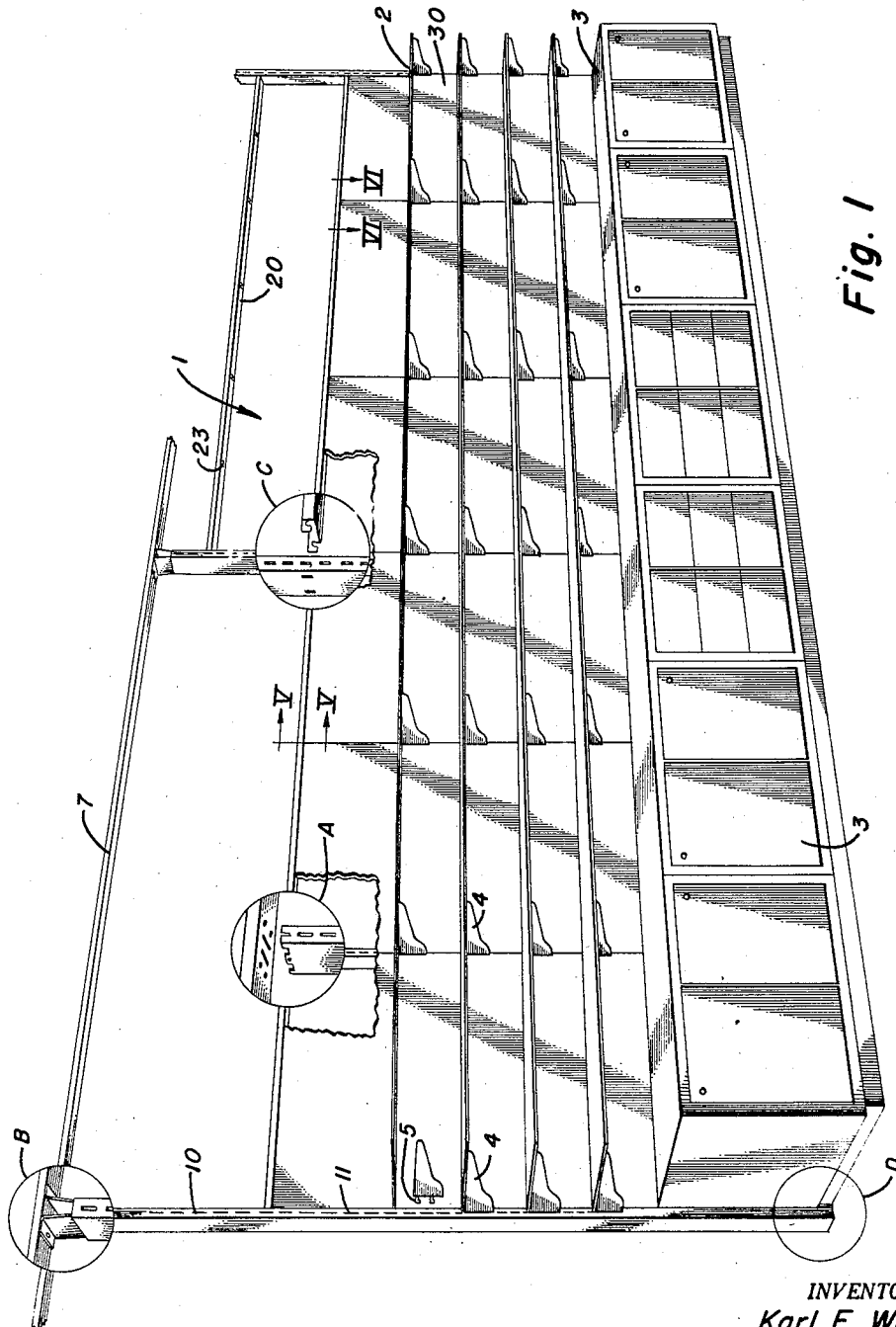
K. F. WEBER ET AL

2,934,181

MODULAR WALL CONSTRUCTION

Filed March 4, 1957 .

3 Sheets-Sheet 1



INVENTORS

Karl F. Weber

Earl Clouse

Clifford J. Norby

BY Price and Heneveld

ATTORNEYS

K. F. WEBER ET AL
MODULAR WALL CONSTRUCTION

3 Sheets-Sheet 2.

Fig. 3

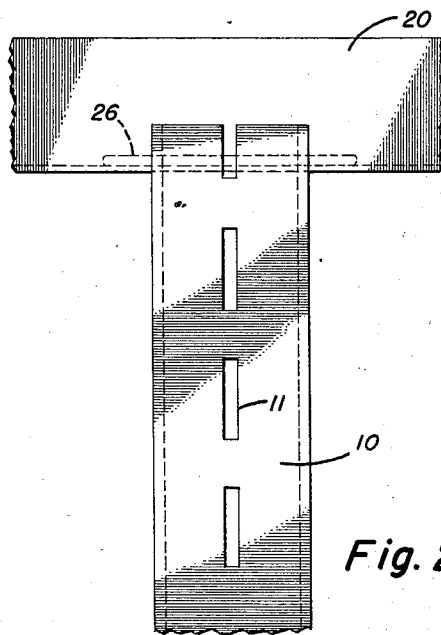


Fig. 2

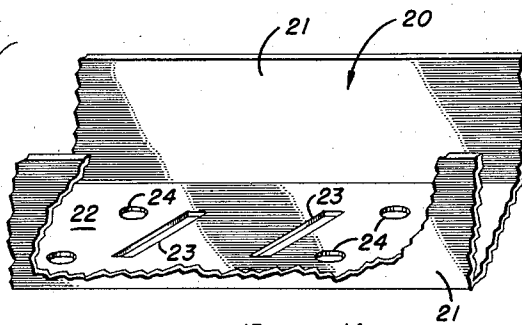
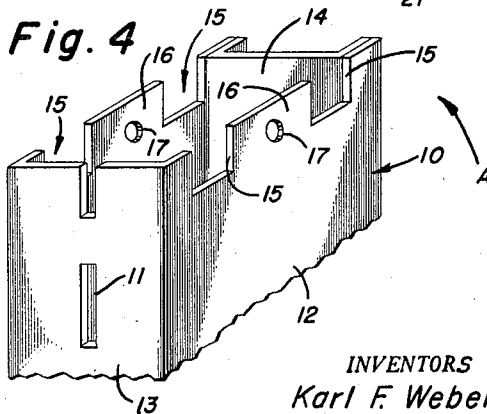


Fig. 4



INVENTORS
Karl F. Weber
Earl L. Clouse
Clifford J. Norby
BY *Price and Zeneveld*
ATTORNEYS

April 26, 1960

K. F. WEBER ET AL
MODULAR WALL CONSTRUCTION

2,934,181

Filed March 4, 1957

3 Sheets-Sheet 3

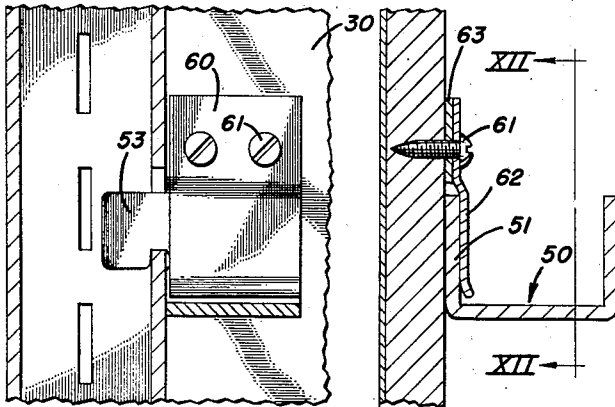


Fig. 12

Fig. 11

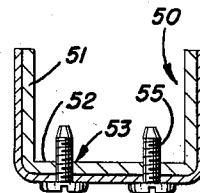


Fig. 9

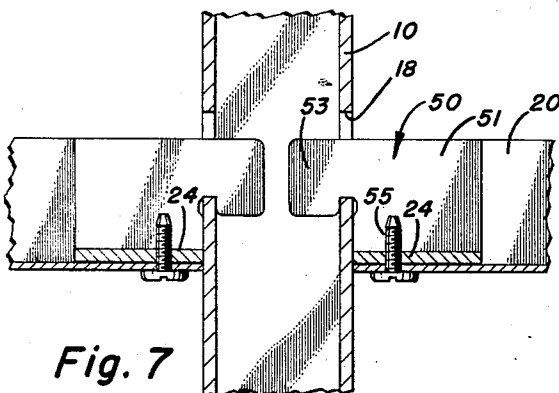


Fig. 7

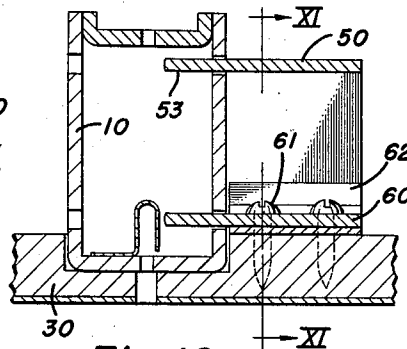


Fig. 10

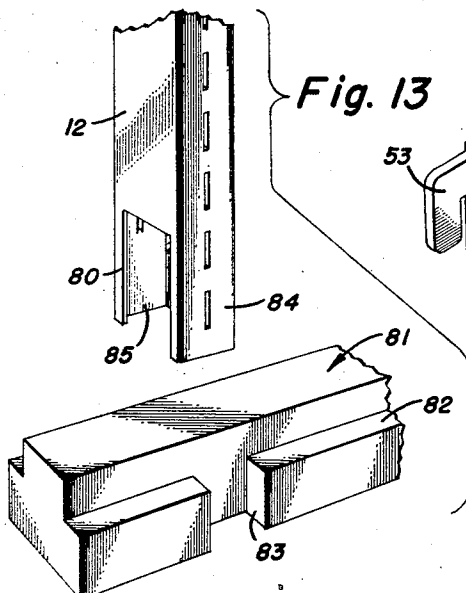


Fig. 13

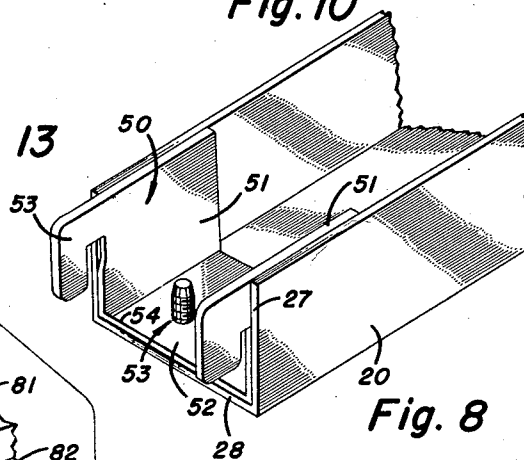


Fig. 8

INVENTORS
Karl F. Weber
Earl Clouse
Clifford J. Norby
BY *Cruick and Leneveld*
ATTORNEYS

1

2,934,181

MODULAR WALL CONSTRUCTION

Karl F. Weber and Earl L. Clouse, Grand Rapids, and Clifford J. Norby, Rockford, Mich., assignors to Weber Showcase & Fixture Company, Inc., Grand Rapids, Mich., a corporation of Michigan

Application March 4, 1957, Serial No. 643,738

3 Claims. (Cl. 189—34)

This invention relates to a modular wall construction having a number of basic modular parts.

Pre-fabricated wall systems constructed of a number of basic parts have become very popular particularly in retail store equipment. These type wall systems are utilized for facing rough walls and also for constructing free or semi-free standing walls on which shelves and showcases are mounted. Although these type wall systems are common, they have not been completely satisfactory.

An object of this invention is to provide a novel modular wall construction composed of a minimum number of basic parts which are easily erected.

Another object of this invention is to provide a modular wall constructed of a minimum number of basic parts that are flexible and adaptable to meet various specifications.

Another object of this invention is to provide a modular wall construction composed of a number of basic parts properly indexed for easy erection.

Still another object of this invention is to provide a modular wall construction having a novel means of attaching the tie rods to the upright standard posts.

A more specific object of this invention is to provide an attachment means for attaching the top of the post to a continuous tie rail.

Another more specific object of this invention is to provide an attachment means for connecting the tie rails to the side of the posts.

Still another object of this invention is to provide a novel means for mounting panels on the skeleton support structure which comprises the upright standard post and tie rails.

The overall object of this invention is to decrease the number of basic parts required and the installation costs of the modular wall in order to reduce the overall cost of the entire construction.

Other objects of this invention will become obvious upon reading the following specifications in conjunction with the accompanying drawing wherein:

Fig. 1 is an oblique, elevational view of the assembled wall of this invention. Enlarged, exploded parts of the wall construction are shown.

Fig. 2 is a fragmentary, front elevational view of the novel attachment means between the tie rail and the top end of one standard.

Fig. 3 is a fragmentary, side elevational view of the connection between the ceiling and the upright post.

Fig. 4 is a fragmentary, elevational, exploded view of the connection between the top of the standard post and the tie rail.

Fig. 5 is a fragmentary, cross sectional, elevational view taken along the planes V—V of Figs. 1 and 6.

Fig. 6 is a fragmentary, cross sectional view taken along the plane VI—VI of Figs. 1 and 5.

Fig. 7 is a fragmentary, cross sectional, elevational view taken along the plane through the connection be-

2

tween the tie rails and the sides of an upright standard post.

Fig. 8 is a fragmentary, oblique view of the tie rail and the clip for connecting the tie rail to the side of the standard post.

Fig. 9 is a cross sectional view taken along a plane through the means for securing the clip and the tie rail together.

Fig. 10 is a fragmentary, cross sectional, view of a standard and the clip means for securing the panel to the standard.

Fig. 11 is a cross sectional view taken along the plane XI—XI of Fig. 10.

Fig. 12 is a cross sectional elevational view taken along the plane XII—XII of Fig. 11.

Fig. 13 is a fragmentary, oblique, exploded view of the connection between the support post and the floor plate or strip.

Briefly this invention relates to a modular wall construction including a plurality of upright standard posts arranged parallel to each other and supported by tie rails extending across their tops or between their sides. This invention includes the attachment means between the top end of the standards and the tie rails and also the attachment means between the tie rails and sides of the standard post.

The attachment means at the top of each post includes the construction of a pair of ears extending from the top of the post and protruding through slots arranged at determined horizontal modular intervals in the tie rails. The ears are parallel and have aligned openings for receiving a pin which holds the tie rods in position.

The attachment means between the side of the standard post and end of the tie rods comprises a clip having hooks protruding into slots in the sides of the post. Means are provided for securing the clip to the tie rail. This modular wall construction provides an easily adaptable and flexible system composed of a small number of basic parts that are easily installed.

Referring to the drawings, Fig. 1 illustrates an installed modular wall unit which includes the overall wall construction 1, the shelves 2 and the cabinets 3. The wall construction 1 is especially adapted for supporting the shelves 2 by means of the brackets 4 which have hooks 5 received by the vertical slots 11 of the standard post 10. Fig. 1 schematically illustrates by enlarged fragmentary parts the various connections between the upright standard post 10 and the tie rail 20. These connections or attachments are circled and designated as A, B, C and D.

All of the connections, A, B, C and D, are made possible by the particular construction of the standard post 10 and tie rod 20. Therefore, these elements will first be described.

Standard post 10 is a hollow rectangular member having a two sides wall 12, the front face wall 13 and the rear wall 14 (Fig. 4). As shown, the rear wall 14 is a separate element attached, by welding or otherwise, to the one-piece U-shaped element forming the front and side walls. This particular construction is not necessary in the broadest aspect of this invention. The standard post 10 can be constructed of a single rectangular rolled piece or tubing. The front face 13 of the standard post 10 has a plurality of elongated vertical slots 11 provided for the purpose of mounting shelving brackets 4 and also if desired to mount the panels 30 thereon. The top end of the center standard posts 10 that do not extend to the ceiling have a pair of notches 15 on each of the sides 12 providing the parallel ears 16 between the notches. Ears 16 extend upwardly from the main body of the standard post and each has an opening or hole 17. The holes

17 are aligned and located a plate thickness above the level of the bottom edge of the slots 15.

The tie rods 20 (Fig. 4) are all identical. Each of them is a U-shaped channel having the side flanges 21 and the web 22 connecting the flanges. A plurality of pairs of slots 23, extending transversely of the web 22, are cut into the web at modular intervals along the entire length of the tie rod. The length of each interval is dependent upon the desired modular spacing of the posts. For example, we have found that modular spacings of 2' 0", 2' 6", 3' 7", and 4' 0" give unlimited adaptability to the system making it possible to cope with any situation or problem that may arise. We have conceived that all of these modular lengths and others can be provided for by spacing the pairs of slots every 6". This would adapt the same tie rod for almost any situation or problem.

Immediately adjacent slots 23 and on the opposite sides of each pair are the holes or openings 24 provided for the purpose of attaching clips hereinafter described.

The slots 23 receive the ears 16 and the tie rod 20 seats in the notches 15. When thus installed, a locking pin, shown as a cotter pin 26, is inserted through the holes 17. This locks the tie rail 20 on the top end of the standard post 10.

Fig. 3 illustrates the ceiling connection B. This construction includes a U-shaped member 40 having the flanges 41 at the end of a U-shaped connector part 42 extending downwardly from a ceiling plate 7. The size of U-shaped connector part 42 is identical to the cross sectional shape and size of the channel extending through the standard post 10. Thus the top end of post 10 receives the connector part 42 securely supporting it.

Figs. 7, 8 and 9 illustrate the connection C between the tie rail and the sides of the standard post 10. This connection or attachment means includes a U-shaped clip 50 having the side flanges 51 connected together by web 52. The side flanges 51 each have a protruding hook 53. The web 52 has a pair of openings 53 aligned with the openings 24 of the tie rails 20. The openings 53 are spaced from the edge 54 of the clip the same distance as opening 24 is spaced from the slots 23. Thus the tie rod can be severed or cut off at one of the slots 23 and when clip 50 is inserted, so that its edge 54 is flush with the severed edge 28 of the tie rods, holes 24 and 53 are aligned permitting screws 55 to be inserted for securing the clip in the end of the tie rod.

The upright standard posts 10 are provided with vertically elongated slots 18 in the sides 12. These slots are located at modular heights and receive the hooked ends 53 of the clip 50 (Fig. 7).

The clips 50 serve a dual purpose. Besides providing the means for attaching the tie rod to the standard posts 10, they provide a means for supporting the panel 30. This is accomplished by a second clip 60 attached to the back side of the panel 30 by the screws 61. Clip 60 has an offset portion 62 which when the clip is attached to the back of the panel is spaced from the panel for receiving the side flange 51 of the clip (Fig. 11). If the offset is not sufficiently great a shim 63 is provided to produce the desired offset. This means of mounting the panel on a standard 10 eliminates the outwardly visible clips 70 shown in Fig. 6.

The standards 10 are supported at the lower end by the connection D illustrated in Fig. 13. This structure includes a large cut out 80 in both sides of the standard. This cut out receives an inverted T-shaped floor strip or plate 81. The base 82 of plate 81 has notches 83 at modular intervals corresponding to the spacing of the standards. The front portion 84 and rear portion 85 of the standard post are received by the notches 83 so that the upright post straddles the wood floor plate or strip. The bottom portion of the post is machined to fit over the notching 83 in the floor strip and the floor plate 82 is machined at the bottom to the exact dimension required.

Assembly operation

In view of the above description, it should become readily apparent that the erection of the modular wall is relatively simple. The wood floor plate or strip 81 is first laid on the floor and then leveled. It is then firmly secured to the floor by any suitable means. The wood floor plate or strip having properly spaced notches 83 is selected depending upon the desired modular spacing of the upright standard posts 10.

After placing the standards on the floor plates with the standard straddling the plate, the tie rods are extended across and between the standard post. The positions of the tie bars, that is, whether they extend across or between the standards, depends upon the particular shape of the wall. Fig. 1 is a shape selected to demonstrate all of the connections A, B, C and D. When the tie bar extends across the top of the standard post (connection A) the ears 16 are inserted through the slots 23 and the locking pin 26 inserted. In this position the tie rods 20 are seated in the notches 15 firmly supporting the top end of the support post. If the tie rod intercepts the support post (connection B) it is severed or cut off at the appropriate slot 23 so that the edge of the end of the tie rod abuts the standard post. The selection of the appropriate modular spacing of the pairs of slots 23 provides the desired length.

After cutting the tie rod at the proper slot 23, the clips 50 are inserted in the ends and holes 53 and 24 are aligned for insertion of the nut 55. The nuts 55 then secure the clips 50 to the tie rod. The hooked ends 53 are then inserted through the side openings or slots 18 firmly securing the tie rods to the side of the standard.

In those cases where the standard post extend to the ceiling a ceiling connector is attached to the ceiling or a ceiling plate and the standard post inserted over it.

The above connection steps are all repeated at appropriate points until the entire wall support structure is erected. Then the panels are attached to the wall support structure either by clips 70 (Fig. 6) or by clips 60 and 50 previously described. The clips 60 can be utilized along the entire length of the tie rods located behind the panel. Otherwise, separate clips 50 are inserted in the opening 18 and the clips 60 attached to them.

The shelving brackets 4 are then secured in the elongated slots 11 and any other type of trimming such as molding, cornices and other fixtures are attached.

It should be obvious from the above descriptions that this modular wall construction provides a construction which is unequalled in simplicity, flexibility, adaptability and economy.

Having described my invention it should be apparent that although certain embodiments have been described, modifications and alterations thereof are possible within the broadest aspect of this invention. Therefore, such modifications and alterations are considered to be covered by the appended claims unless the language of the claims expressly state otherwise.

I claim:

1. A modular wall construction comprising: a plurality of rectangular upright standard posts arranged parallel to each other; said standard posts having front, back and side walls; said side walls having two pairs of aligned notches on the top end forming two parallel ears therebetween; a U-shaped tie rail extending across the top of said posts, said tie rail including parallel side flanges connected by a web portion, the overall width of said web portion being equal to the distance between the most remote sides of said notches; said web portion having pairs of parallel transverse slots arranged along its length at predetermined modular intervals; said slots receiving said ears with said tie rail seated in said notches so that said parallel side flanges abut said most remote sides of said notches; aligned openings in said ears; and a pin extending through said aligned openings.

5

2. A modular wall construction comprising: a plurality of upright standard posts arranged parallel to each other and having walls with two pairs of aligned notches on the top end; said pairs of aligned notches being arranged parallel to one another with one notch of each pair located adjacent a notch of the other pair, there being formed between each of said two adjacent notches an ear; each ear between each of said two adjacent notches being spaced from and substantially parallel to the ear formed between the other of said two adjacent notches; a U-shaped tie rail extending across the top of said posts, said tie rail including side flanges connected by a web portion, the overall width of said tie rail measured between the outermost sides of said side flanges being equal to the distance between the most remote sides of each of said two adjacent notches; said web portion having pairs of parallel transverse slots arranged along its length at predetermined intervals; said slots receiving said ears with said tie rail seated in said notches so that said side flanges abut said most remote sides of said notches; aligned openings in said ears; and a pin extending through said aligned openings.

3. A modular wall construction comprising: a plurality of upright hollow standard posts arranged parallel to each other and each having side slots at predetermined vertical intervals; tie rail means constructed of modular tie rails each having side flanges and a connecting portion with pairs of transverse slots in said connecting portions at predetermined horizontal modular intervals and openings in said connecting portion on the opposite sides of and immediately adjacent said pairs of slots; said tie rail means including one tie rail extending across and attached to the top end of at least one of said posts and a second tie rail terminating at the side of and attached intermediate the ends of at least one other of said posts;

6

said second tie rail terminating at said side being severed at one of said slots; first attachment means at said top end; second attachment means at said side; anchor means for anchoring said posts to the floor; said first attachment means comprising pairs of aligned notches in the top end of the walls of said posts; said pairs of aligned notches being arranged parallel to one another with one notch of each pair located adjacent a notch of the other pair, there being formed between each of said two adjacent notches an ear; each ear between each of said two adjacent notches being spaced from and substantially parallel to the ear formed between the other of said two adjacent notches; aligned openings in said ears, said first tie rail having an overall width measured between the outermost sides of its flanges equal to the distance between the most remote sides of each of said two adjacent notches, said tie rail slots receiving said ears with said tie rail seated in said notches so that said side flanges abut said most remote sides of said notches, and a pin extending through said openings; said second attachment means comprising a clip having a support plate portion and protruding hooks seated in said side slots, said support plate portion having openings aligned with openings in said tie rail means; and means extending through said last mentioned openings securing said clip to said tie rail means.

References Cited in the file of this patent

UNITED STATES PATENTS

1,231,289	Otte	June 26, 1917
1,916,189	Bales	July 4, 1933
1,965,599	Koenig et al.	July 10, 1934
1,982,104	Holdsworth	Nov. 27, 1934
2,781,110	Weller et al.	Feb. 12, 1957