March 4, 1958 R. D. DAHLIN 2,825,470

SHELVING CONSTRUCTION

Filed June 13, 1955 2 Sheets-Sheet 1

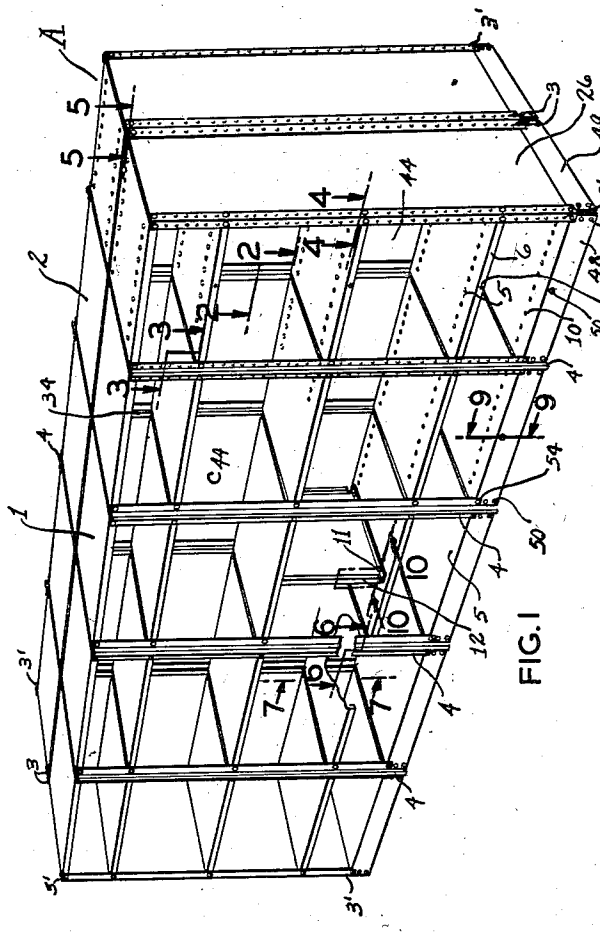


FIG. 1

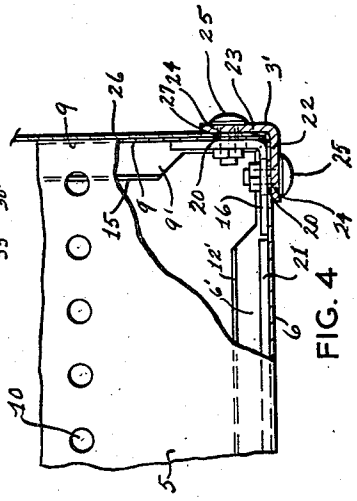


FIG. 4

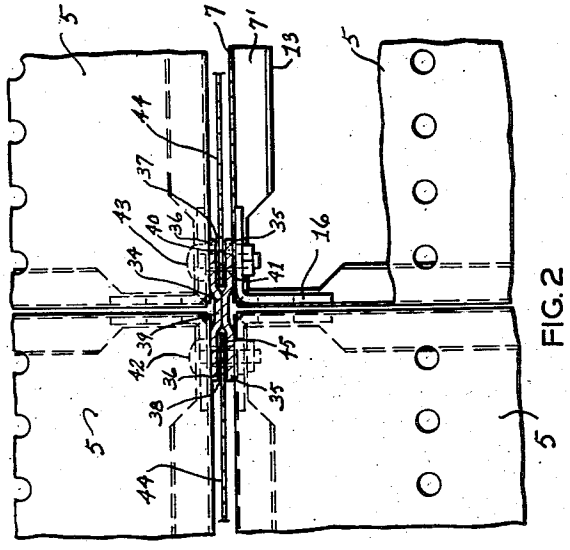


FIG. 2

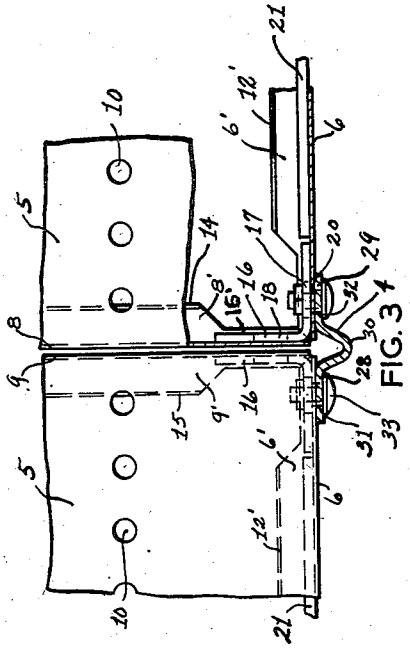


FIG. 3

INVENTOR.
ROBERT D. DAHLIN
BY Ralph N. Kalish
ATTORNEY

March 4, 1958 R. D. DAHLIN 2,825,470

SHELVING CONSTRUCTION

Filed June 13, 1955 2 Sheets-Sheet 2

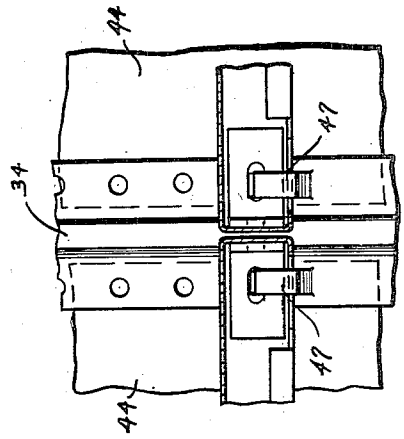


FIG. 8

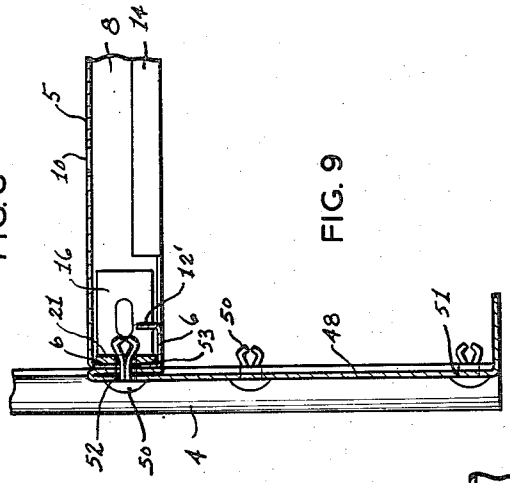


FIG. 9

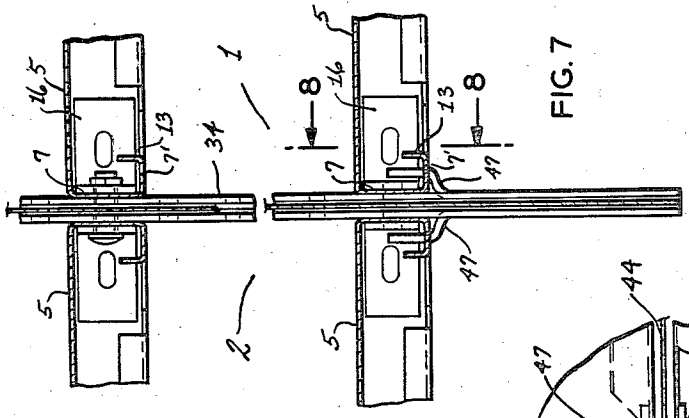


FIG. 7

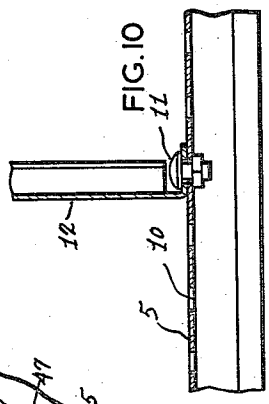


FIG. 10

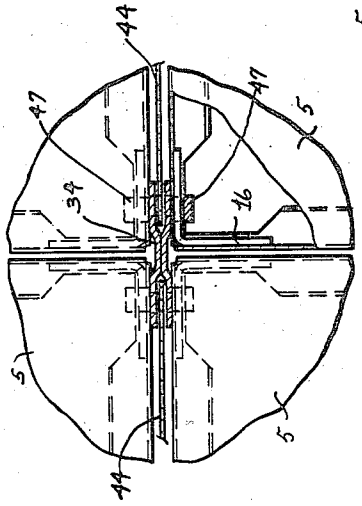


FIG. 6

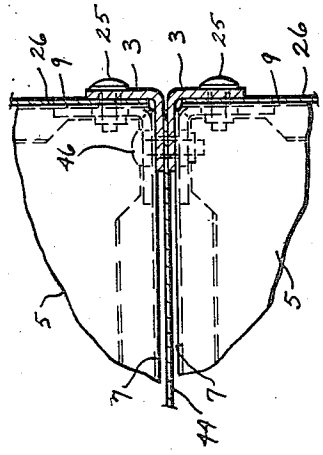


FIG. 5

INVENTOR.

ROBERT D. DAHLIN

BY Ralph W. Kalish

ATTORNEY

United States Patent Office

2,825,470

Patented Mar. 4, 1958

2,825,470

SHELVING CONSTRUCTION

Robert D. Dahlin, Rock Hill, Mo., assignor to Benchcraft, Inc., St. Louis, Mo., a corporation of Missouri

Application June 13, 1955, Serial No. 514,833

4 Claims. (Cl. 211—136)

This invention relates in general to storage equipment and, more particularly, to novel shelving construction which provides clearance throughout the full extent of the shelf space.

Heretofore, in commercial shelving and bins there has been an inordinate amount of waste storage space resulting from the customary nature of construction. It has been the practice to provide T-shaped center posts with the leg or flange of the T extending inwardly between the ends of juxtaposed shelf sections and thereby restricting the over-all shelf clearance. Such center posts are presented in transversely aligned pairs and, consequently, the maximum extent of unrestricted shelf space will necessarily coincide with the length of a particular shelf section. The lack of economy in such an arrangement will be readily apparent when one notes the fact that shelving will be, through stress of circumstances, considered from the standpoint of shelf section rather than from the standpoint of a composite integrated shelf of desired length. If the particular articles and the like to be shelved are not so dimensioned as to allow compact storage from one end of a shelf section to the other, or, as it were, from one restricting corner post to the next, certain storage space adjacent the end of each shelf section will be, perforce, left vacant. Furthermore, since a distance between transversely aligned center posts is less than the width of the shelf sections, the intervening space is seldom amenable to usage. Depending upon the character of the merchandise or the like to be stored, the loss of effective storage space in shelving of current construction has in some cases reached a heightened degree, with expected attendant expense.

Industry has hence come to accept as requisite the fact that a certain high percentage of total storage space in any shelf construction will be unusable. To compensate for this heretofore considered inherent deficiency, firms have regularly purchased an excess of actually needed shelving so as to provide a resultant effective storage space commensurate with the particular requirements. It will be seen that considerations of such a character will call for the provision of adequate warehouse space in new construction to accommodate such actually unneeded shelving. The unwanted cost of such additional shelving, together with the loss of valuable warehouse space for receiving same, have proved most expensive to business.

Therefore, it is an object of the present invention to provide shelving construction which permits of maximum free clearance so that contiguous shelf sections, from front to back, throughout their entire combined extent are available for storage.

It is a further object to provide shelving construction which comprises shelving units in back-to-back arrangements, having common back panels and being engaged to form integrated structure by unique common center posts.

It is a further object of the present invention to provide shelving construction having novel reinforcing means, which obviates the necessity of sway-braces, or other structural support members disposed between shelf sections, and provides the construction with rigidity and strength.

An additional object of the present invention is to provide shelving construction which may be readily assembled in upright position and disassembled without the use of skilled labor; which is durable and reliable in usage; and the use of which will render unnecessary the heretofore purchase of excess shelving by industry.

These and other detailed objects are obtained by the structures illustrated in the accompanying drawings (two sheets) in which—

Figure 1 is a perspective view of shelving constructed in accordance with and embodying the present invention.

Figure 2 is a horizontal transverse sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a horizontal transverse sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a horizontal transverse sectional view taken on the line 4—4 of Figure 1.

Figure 5 is a horizontal transverse sectional view taken on the line 5—5 of Figure 1.

Figure 6 is a horizontal transverse sectional view taken on the line 6—6 of Figure 1.

Figure 7 is a vertical transverse sectional view taken on the line 7—7 of Figure 1.

Figure 8 is a vertical transverse sectional view taken on the line 8—8 of Figure 7.

Figure 9 is a vertical transverse sectional view taken on the line 9—9 of Figure 1.

Figure 10 is a vertical transverse sectional view taken on the line 10—10 of Figure 1.

Referring now by reference characters to the drawings which illustrate a preferred embodiment of the present invention, A designates shelving construction of the commercial type consisting of two like units indicated 1, 2 in back-to-back relationship. Since units 1, 2 are similarly constructed, constituent elements of only one unit will be described with the understanding that the same form parts of the other.

Each unit comprises two inner and two outer angle-shaped corner posts 3, 3′ respectively, a plurality of front center posts 4 presented in parallel, spaced relationship to the outer corner posts 3′, and a plurality of end-to-end shelf sections 5 to form shelves of desired length. Each shelf section 5, which is constructed preferably of suitable gauge sheet metal, is provided with depending flanges, there being a front flange 6, a rear flange 7, and two end flanges 8, 9. The said flanges are formed integrally with the top of the shelf section, which is provided adjacent its front edge with a series or a row of openings 10, punched or otherwise formed therein for receiving bolts 11 for the retention of partitions or shelf dividers 12 at predetermined locations.

Shelf section flanges 6, 7, 8 and 9 at their lower ends are turned inwardly to present a horizontal extension 6′, 7′, 8′, and 9′ respectively, and are thence bent upwardly to form a lip 12′, 13, 14 and 15 respectively, thereby endowing said shelf sections 5 with increased rigidity for resisting twisting or bending forces. Each flange extension 6′, 7′, 8′ and 9′ is cut away at its end portions, as may best be seen in Figure 3, to render accessible the inner portions of the corners of each shelf section 5 for facilitating assembly. Provided for engagement to the inner surfaces of adjacent shelf flanges at each corner of each shelf section 5, is an angle-shaped corner brace 16, the legs 16′ of which are of substantially equal length with the cut-a-way portions of the flange extensions, and are

each provided with a bolt-receiving opening 17, 18 respectively, for registration with openings designated generally 20 at each end of each shelf flange. Secured to the inner face of the front flange 6 of each shelf section 5 is a reinforcing bar 21 extending substantially the distance between the aligned legs of adjacent corner braces 16, and which may be secured in position, as by spot welding.

As shown in Figures 1 and 4, corner posts 3, 3', being angle-shaped in cross section, comprise legs 22, 23, which are each throughout their length provided with a plurality of apertures 24 for extension therethrough of bolts 25 for engaging same to the corner portions at the outer end of the end shelf sections 5. It will thus be seen that bolts 25 project through aligned apertures 24, shelf flange openings 20, and openings 17, 18 of corner braces 16. Legs 22 of corner posts 3, 3' will be flush on their inner surface against the outer face of shelf flanges 6, 7 respectively, whereas legs 23 of said corner posts 3, 3' will be presented in spaced relationship to the outer face of end flanges 9 of the adjacent shelf sections 5 to permit extension therebetween of the edge portions of a sheet metal end panel 26. Said end panel 26 in its vertical edge portions is punched or otherwise provided with a series of openings 27 for receiving bolts 25. With the openings formed in the flanges of shelf sections 5, corner posts 3, 3', and end panels 26, the shelves may be vertically spaced from each other any desired distance and yet have the corner portions thereof securely engaged to the corner posts 3, 3' and end panels 26. Front center posts 4 are presented for engagement to the end portions of each two juxtaposed shelf sections 5, and by their use allow of the incorporation of any number of shelf sections in end-to-end relationship to provide a horizontal storage space of desired length. In cross section front center posts 4 are contoured, as by stamping, to form planar aligned side flanges or portions 28, 29 and an intermediate or central, outwardly projecting V-shaped portion 30, which provides marked rigidity to said center posts 4, thereby rendering same resistant to applied stresses and strains. Each of said center post flanges 28, 29 is apertured throughout its extent to present vertically aligned apertures 31, 32 respectively for registration with openings 20 in front flanges 6 of the associated shelf sections 5. Bolts 33 extend through apertures 31, 32 and the registered openings 20 of the related shelf sections 5, as well as through openings 17 of the related corner braces 16, all as may best be seen in Figure 3, to present a firm and stable joint.

Shelf sections 5 are thus presented in end-to-end relationship, and proximate their lines of adjacency, on their outwardly presented faces, are engaged to front center posts 4, which thus cooperate with corner posts 3, 3' to maintain shelf sections 5 in integrated relationship for presenting a resultant shelf of their combined lengths which may be of any requisite extent. It is to be particularly noted that center posts 4, due to the novel configuration thereof, have no portions which extend inwardly of the forward edges of shelf sections 5, so that no obstruction or restriction is presented within the shelf area, with free clearance from front to back throughout their united extent being provided.

For the purpose of supporting shelf sections 5 on their inwardly presented surfaces, as well as to bind units 1, 2 together in an integral structure, there is provided a plurality of inner center posts 34, which as will now be shown, are common to both units 1, 2, and are each in transverse alignment with a front center post 4 of each unit 1, 2. Referring to Figure 2, it will be noted that inner center posts 34 are fabricated preferably from a pair of elongated bars or strip stock secured surface-wise together, as by welding, and contoured at their ends, as at 35, 36, to form oppositely openings, aligned channel-like recesses 37, 38 interconnected by a central web portion 39, the surfaces of which are spaced inwardly of the adjacent outer face portions of channel walls 35, 36. Said channel wall portions 35, 36 are drilled, punched, or otherwise apertured from their upper ends to a point spaced from their lower ends with aligned bolt openings 40, 41 respectively, the axis of said openings 40, 41 being normal to the vertical axis of channels 37, 38.

Retaining bolts 42, 43 are presented for extension through openings 40, 41 of channel walls 35, 36 for engaging same to rear flanges 7 and and the related corner braces 16 of adjacent side-by-side shelf sections 5 of the units 1, 2; the shelf sections 5 of one unit being desirably, but not necessarily, aligned planar-wise with the shelf sections 5 of the other unit. The distance between the shelf sections 5 of one unit and those of the other will be equal to the thickness of the channel-formed ends of inner center posts 34. Said center posts 34, in addition to fixedly supporting shelf sections 5 of the units 1, 2, also serve the normal function of center posts by securing the adjacent end-to-end shelf sections 5 of each unit 1, 2. For disposition between the shelf sections 5 of one unit 1, 2 and those of the other are common back panels 44, fabricated of sheet metal or other suitable material, having a width slightly less than the length of the shelf sections, which along their vertical side edges are provided with a series of perforations or openings 45. The said perforated edge portions of back panels 44 are received within channels 37, 38 and retained therein by said bolts 42, 43, which pass through perforations 45. Thus, in addition to supporting the shelf sections 5 of units 1, 2 and forming the means for tying units 1, 2 into an integrated structure, center posts 34 also serve to maintain common back panels 44 in position. It is to be noted that the thickness of inner center posts 34 is most limited so that the distance between adjacent shelf sections 5 of the units 1, 2 is relatively limited, so that there is no substantial wasted space.

As will be seen in Figure 5, the outer end vertical margins of the back panels 44 at the opposite ends of shelving construction A are received between the confronting legs 22 of adjacent inner corner posts 3 of units 1, 2, and are retained in such position by bolts 46.

Directing attention now to Figures 7 and 8, it will be seen that inner center posts 34 at a predetermined point spacedly above the lower ends thereof are stamped to present a pair of outwardly and upwardly turned tongues 47, which extend from channel walls 35, 36 for supportingly engaging lower shelf sections 5, adjacent the inner corners thereof. It will thus be seen that in assembly of shelf construction A the lower shelf sections are readily located by disposition upon tongues 47. By such engagement the inner center posts 34 will be located with respect to the shelf sections 5 so that the application of the corner post 3, 3' and front center posts 4 can be readily accomplished. Thus, there is no need for a workman to laboriously attempt to seek bolt retaining engagement between the lower shelf sections 5 and the inner center posts 34, as such may be readily accomplished by the means presented. Through the ready mutual locating of inner center posts 34 and lower shelf sections 5, shelving construction A may be quickly assembled in an upright position, which may be expeditiously performed at the ultimate site and obviate the need for special equipment.

Having completed the assembly of the elements above described, front and end base strips 48, 49, respectively, may be easily applied to the structure by means of conventional spring fasteners 50, which extend through the openings of front center posts 4 and corner posts 3, 3' and registering openings 51 provided at the ends of said strips 48, 49. Front base strips 48 also are provided with an opening 52, at a point intermediate its ends and adjacent its upper edge for alignment with an aperture 53 formed in front flange 6 of each shelf section 5; there being a fastener 50 also projecting through said aligned opening 52 and aperture 53. Front and end base strips 48, 49 are mounted outwardly of center posts 4, and

corner posts 3, 3', respectively, and are each cut away in their upper corner portions, as at 54, to avoid interference with the lowermost retaining bolts 33, 25, as the case may be. By the unique design of said base strips 48, 49 the same are readily mounted from the exterior, without requiring access under the shelving to perform such operation. The appearance of shelving construction A is decoratively finished by said strips 48, 49 as well as the rigidity of same being materially enhanced thereby.

In view of the above, the present invention provides shelving construction which permits of full effective storage area throughout the combined extent of the shelf sections 5 which are not in any way restricted by structural members, as is common with currently used shelving. Full front-to-back and end to end space is presented. Furthermore, shelving construction A is of marked rigidity and durability, despite the absence of the heretofore customary sway braces and the like, since corner braces 16 serve to effectively and reliably render shelf sections 5 resistant to any untoward twisting forces, and make the over-all construction a most rugged and stable one.

It should be understood that changes and modifications in the formation, construction, arrangement, and combination of the several parts of the shelving construction may be made and substituted for these herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention what I claim and desire to secure by Letters Patent is—

1. Storage construction comprising first and second shelving units, each unit having end members and at least two shelves extending between said end members in end to end relationship, a common center post being disposed between each pair of end to end shelves of said first and second units and being connected thereto, said center post being provided with oppositely opening recesses, a back panel common to both of said first and second units being received in its vertical side portions within the recesses of said center post, means engaging said back panels to said center post, and fastening means securing said back panel between end portions of opposed shelves of said first and second units.

2. Storage construction comprising first and second juxtaposed shelving units for disposition in back to back relationship, each unit having end members and a plurality of shelves extending between said end members in end to end relationship, common center posts being disposed between the shelves of said first and second units, said center posts each having oppositely opening channel-forming portions and are in surface abutment on their outer faces with the lateral face of the proximate shelf of said first or second unit, and a back panel common to both of said first and second units, said panel being provided along its vertical edge portions with a plurality of apertures for registration with the aligned openings of the center post channel walls, and fastening means extending through selected ones of said openings and back panel apertures for securing said center posts and back panel to the confronting shelves of said first and second units.

3. Storage construction comprising first and second juxtaposed shelving units, each unit having end members and a plurality of shelves extending between said end members in end to end relationship, common center posts being disposed between the first and second units, each center posts having oppositely opening channel-forming side portions, the walls of each channel-forming side portion being parallel throughout a substantial part of their length for surfacewise abutment against lateral faces of the adjacent confronting shelves of said first and second units, a web portion connecting said channel-forming side portions and being disposed inwardly of the outer faces of the walls thereof for extension across the joint line between the proximate shelves of each unit, and a back panel common to said first and second units and being received in its vertical edge portions within the channel-forming side portions of adjacent center posts for disposition between said first and second units.

4. Storage construction for providing maximum shelf clearance comprising first and second juxtaposed shelving units, in back to back relationship each of said units comprising end members, a plurality of shelf sections in abutting end to end relation to form shelves of preselected length, each shelf section having depending lateral flanges, outer center posts having planar-aligned side portions for surfacewise engagement to lateral flanges of adjacent shelf sections, an intermediate web between and connecting said side portions of said outer center posts and being presented outwardly of the adjacent lateral flanges of the adjacent shelf sections, common inner center posts disposed between the first and second units and having for extension across the joint line of abutting shelves of each unit oppositely opening channel-forming side portions the walls of which are parallel throughout a substantial part of their transverse extent, a web connecting said channel-forming side portions of said common center posts, the outer faces of said webs being presented inwardly of the outer faces of the adjacent walls of the channel-forming side portions, and a common back panel having its vertical edge portions received within the confronting channels of adjacent common inner center parts, and fastening means for securing said back panel and inner center posts to confronting lateral flanges of shelf sections of said first and second units.

References Cited in the file of this patent

UNITED STATES PATENTS

910,473	Bales	Jan. 19, 1909
917,870	Jefferis	Apr. 13, 1909
966,002	Fricke	Apr. 2, 1910
1,126,094	Schaffert	Jan. 26, 1915
1,136,245	Leland	Apr. 20, 1915
1,141,991	Terrell	June 8, 1915
1,161,792	Schaffert	Nov. 23, 1915
1,557,066	Medart et al.	Mar. 16, 1926
1,700,549	Sprott	Jan. 29, 1929
1,880,179	Onions	Sept. 27, 1932
2,007,354	Vass	July 9, 1935
2,621,800	Neubauer	Dec. 16, 1952