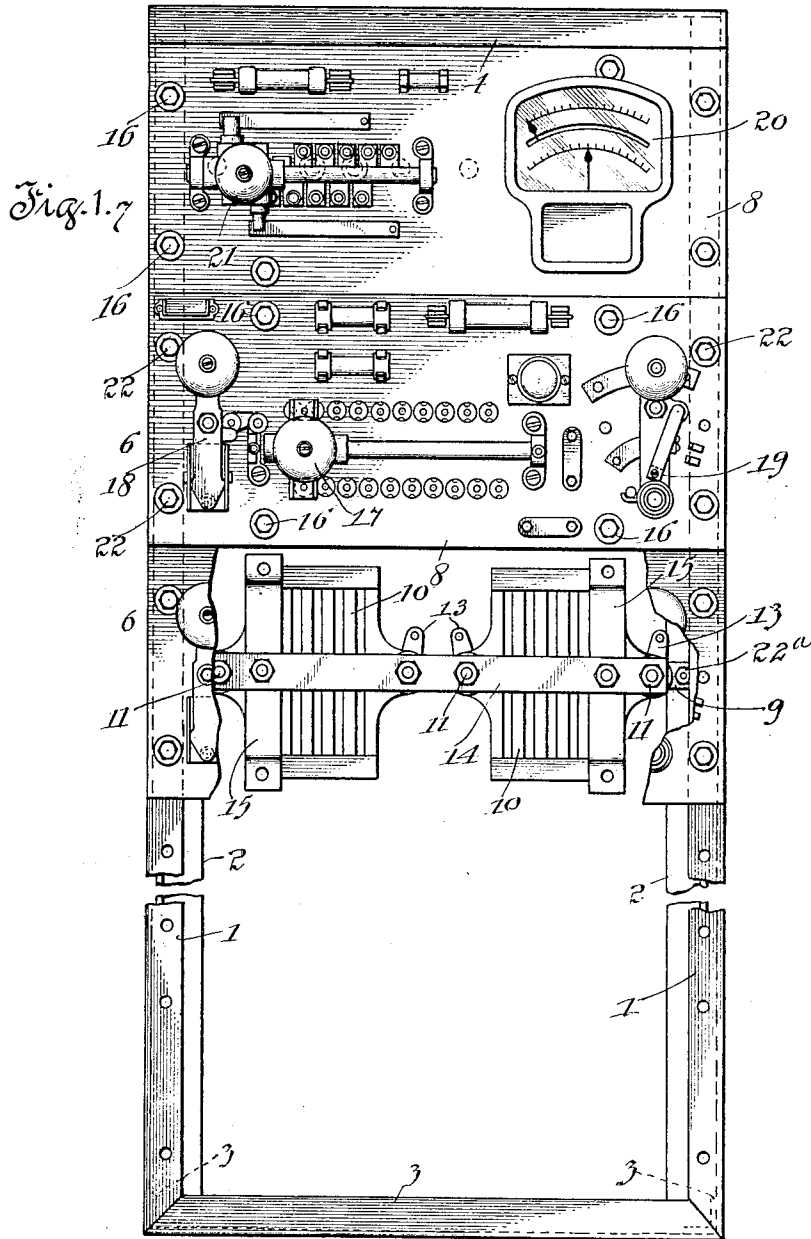


A. J. HORTON.  
 PANEL CONSTRUCTION.  
 APPLICATION FILED JULY 14, 1913.

1,281,376.

Patented Oct. 15, 1918.

2 SHEETS—SHEET 1.



Witnesses  
*Arthur W. Carter*  
*Geo. H. Jones*

Inventor  
*Albert J. Horton*  
 By *Edwin B. H. Towne Jr.*

Fig. 2.

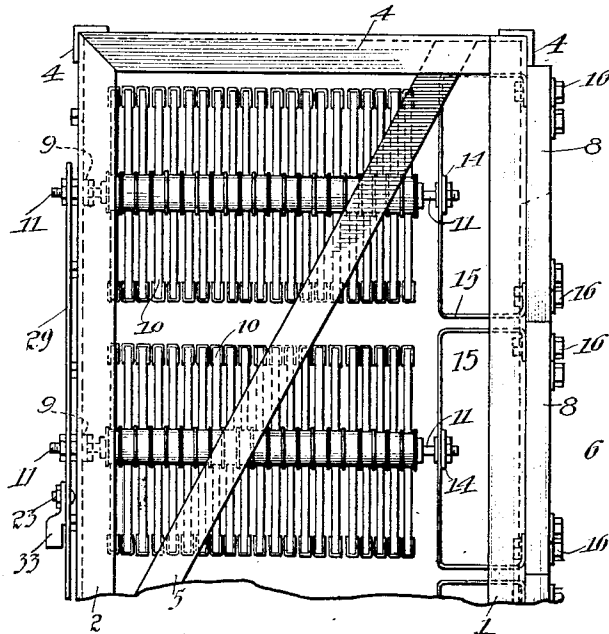
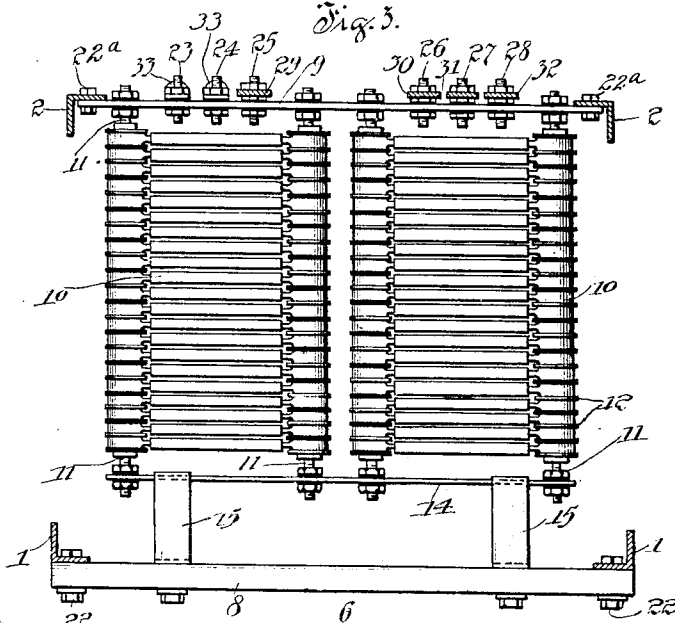


Fig. 3.



Witnesses  
*Robert F. Weir*  
*Geo. Brown*

Inventor  
*Albert J. Horton*  
 By *Edwin B. H. Tower Jr.* atty.

# UNITED STATES PATENT OFFICE.

ALBERT J. HORTON, OF WHITE PLAINS, NEW YORK, ASSIGNOR TO THE CUTLER-HAMMER MFG. CO., OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN.

## PANEL CONSTRUCTION.

1,281,376.

Specification of Letters Patent.

Patented Oct. 15, 1918.

Application filed July 14, 1913. Serial No. 778,844.

*To all whom it may concern:*

Be it known that I, ALBERT J. HORTON, a citizen of the United States, residing at White Plains, in the county of Westchester and State of New York, have invented new and useful Improvements in Panel Construction, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to improvements in panels.

The object of my invention is to provide a panel of unit construction, whereby the number of panel sections or units which go to make up said panel may be varied to meet different requirements, and whereby a rheostat of one capacity may be readily substituted for one of a different capacity.

In the preferred construction illustrated, each panel section is adapted to be used for regulating the charging of a storage battery with the exception of the top section or meter section, from which connection may be made to all the other sections. It is to be understood, however, that the panel sections may be used for an entirely different purpose and, accordingly the invention is not limited to any particular use thereof.

In the drawings:

Figure 1 is a partial front elevation of the panel.

Fig. 2 is a partial side elevation thereof with the side inclosure removed.

Fig. 3 is a top plan view of a unit.

The units, which will be hereinafter described, are assembled in a suitable frame comprising preferably, a pair of front angle irons 1, 1, and a similar pair of rear angle irons 2, 2, said rear angle irons being somewhat closer to each other than said front angle irons. These four elements, which are arranged vertically, constitute standards and are connected at their lower ends preferably by transverse angle irons 3, 3, and at their upper ends by similar angle irons 4, 4, suitably secured thereto. The frame may be braced by diagonal braces 5, 5, if desired.

The units indicated by reference character 6 are charging panel sections and are preferably all alike as far as general overall dimensions are concerned, whereby they are interchangeable. Only one such section is illustrated in front elevation in Fig. 1,

although several are mounted, one above the other, in actual practice, four being a convenient number for commercial purposes. The top unit 7 is different from the remaining units, although it is of the same size and is, therefore, interchangeable from a purely structural standpoint.

Each of the units 6 comprises a front support in the form of a suitable insulating base 8 and a rear support or cross bar 9 between which resistance grids 10 are carried. Said grids are mounted on and insulated from rods 11 with mica washers 12 between alternate adjacent ends to provide the usual series connection for a group of said grids. Contact plates 13 (Fig. 1) may also be arranged at intervals on the rods whereby connections may be made therefrom, permitting one or more grids to be connected in circuit and hence rendered effective. The rods 11 are secured at their rear ends to the cross bar 9, from which they are suitably insulated, and are secured at their forward ends to a shorter cross bar 14 in similar manner. Said cross bar 14 is carried by a plurality of U-shaped frames or brackets 15 secured to the base 8 by suitable bolts 16. The structure just described is sufficiently rigid so that the frame and the grids carried thereby may all be considered as being mounted on the rear of the base 8, whereby the entire structure may be handled as a unit, although in service, each unit is supported both at the front and rear, as hereinafter described.

In the construction illustrated, the front of each base 8 has mounted thereon a rheostat head 17 whereby the resistance of the rheostat may be varied in a well-known manner. A suitable circuit breaker 18, switch 19 and other necessary adjuncts are also mounted thereon. These devices and their functions are not described specifically herein as they form no part of the present invention. For a further understanding thereof, reference may be made to my co-pending application, Serial No. 776,579, filed June 30, 1913, matured into Patent No. 1,227,790, May 29, 1917. The top unit 7 also comprises an insulating base 8 similar to those previously described and having mounted on the front thereof a combined voltmeter and ammeter 20, a rheostat head 21 and other adjuncts. This unit, which is

called the meter section, is adapted to be connected to all of the charging panel sections, whereby the voltage of any of the batteries being charged and the current furnished thereto may be determined whenever desired. The electrical connections on the rear of each of the bases 8 need not be described herein. It will be seen, however, that by virtue of the supporting brackets 15, ample clearance space is provided between the rear of each base and the resistance grids 10 carried thereby, whereby the desired electrical connections may be readily made at the rear of said base.

Each unit is supported in place by having its base 8 removably secured to the front angle irons 1 by bolts 22 and by having its rear cross bar 9 bolted to the rear angle irons 2 by suitable bolts 22<sup>a</sup>. With this arrangement the unit may be readily installed or removed from the supporting frame. In removing said unit the bolts 22 and 22<sup>a</sup> are removed and the entire unit is then pulled out the front of the frame, the brackets 15 of the unit which is being removed sliding for a short distance over the brackets of the unit immediately beneath it and sliding also over the base 8 thereof, whereby said unit is partially supported as it is being drawn out toward the front. The rear of the frame is slightly narrower than the front thereof, as previously described, and, accordingly, the rear cross bar 9, although too long to be drawn out directly between the two front angle irons 1, may, nevertheless, be made to pass between said angle irons by turning the unit as a whole slightly diagonally as it is being lifted clear of the frame.

In installing a unit the steps are simply the reverse of those just described. The cross bar 9 has mounted thereon, but insulated therefrom, a plurality of conducting studs 23, 24, 25, 26, 27 and 28. The studs 25, 26, 27 and 28 are adapted to project through openings in suitable bus bars 29, 30, 31 and 32 when the unit is assembled in the frame, said studs being clamped to said bus bars by suitable nuts. The bus bars 29, 30 are connected with the charging mains. The bus bars 31, 32 are for the purpose of establishing the ammeter and voltmeter connections from the individual panel sections to the top panel. The studs 23 and 24 are provided to permit the various batteries to be charged to be connected to the individual panel sections, suitable connectors 33 being provided for this purpose. The four bus bars are supported entirely by individual units, being independent of the frame proper. However, any one unit may be readily removed as previously described, the studs connecting said unit to the bus bars being first disconnected, of course, said bus bars being held in position by the remaining units. Furthermore, it will be seen

that a panel of any desired size may be readily constructed simply by providing a frame of sufficiently ample dimensions and then assembling therein the desired number of units. Furthermore, after such a panel is assembled any unit may be readily removed and a unit of a different capacity substituted therefor.

The equipment described is particularly adapted for charging vehicle batteries. The line and battery connections are all at the rear of the frame on the outside thereof, rendering the installation simple and facilitating the normal use thereof.

It will be apparent that the invention is not to be limited to the structural details described and illustrated as said details represent only one embodiment of the invention. Accordingly, I desire to cover, as falling within the scope of the invention, whatever suitable equivalent constructions may be devised which come within the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent of the United States is:—

1. Sectional electrical apparatus comprising a plurality of units each having a supporting panel for the electrical elements thereof and certain having resistance elements fixed to the rear of their panels, a unitary frame adapted to accommodate a plurality of said units, the latter being mountable upon said frame and demountable therefrom independently of one another and a set of bus-bars adapted to serve for all units accommodated by said frame, each of said units being adapted to be connected to and disconnected from said bus-bars for mounting and demounting thereof without disturbing the connections between the remaining units and said bus-bars.

2. Sectional battery charging apparatus comprising a plurality of complete rheostat units adapted for individual or collective use and each including a supporting panel and a supporting frame to accommodate and independently support a plurality of said rheostat units with the supporting panels thereof in a substantially flush relation.

3. In a device of the class described, a frame comprising four vertical angle sections with transverse members at the top and bottom thereof, a plurality of panel sections secured to the two front angle bars, a plurality of transverse members secured to the rear pair of angle bars, bus bars arranged vertically and carried by said transverse bars, and resistance grids secured to said panels and removable as a unit therewith, said grids being supported also by said rear transverse members.

4. A battery charging panel comprising a panel section having thereon a charging rheostat and suitable adjuncts for controlling the charging of a battery, a meter panel

having a meter thereon, together with suitable adjuncts, and conductors at the rear of said panel to which said panel sections are electrically and mechanically connected, the

connections for said sections being similar, whereby said sections are interchangeable.

5 A battery charging panel comprising a supporting frame and a plurality of panel sections consisting of a meter panel outfit  
10 and a plurality of battery charging panel sections, bus bars at the rear of said frame-work common to all of said sections, all of said sections being similar as to their connections with said bus bars, and being inter-  
15 changeable one with the other, whereby the number of sections may be varied and whereby a section of one capacity may be substituted for one of a different capacity.

6. In combination, a supporting frame  
20 comprising a plurality of upright members, a panel section comprising an insulating support, a frame-work secured to the rear side thereof, resistance grids carried on said frame-work, said insulating support being  
25 detachably secured to a front pair of upright members, and a portion of said frame-work being secured to a rear pair thereof.

7. In combination, a supporting frame comprising a plurality of upright members,  
30 a panel section comprising an insulating support, a frame-work secured to the rear side thereof, resistance grids carried on said frame-work, said insulating support being detachably secured to a front pair of upright  
35 members and a portion of said frame-work being secured to a rear pair thereof, the rear of said frame-work being of less width than the width of said insulating support and the said forward pair of members being spaced  
40 apart farther than said rear pair, whereby said panel section may be drawn out from between said forward members.

8. In combination, a supporting frame comprising a plurality of upright members,  
45 a panel section comprising an insulating support, a frame-work secured to the rear side thereof, resistance grids carried on said frame-work, said insulating support being detachably secured to a front pair of up-  
50 right members, a portion of said frame-work being secured to a rear pair thereof, the rear of said frame-work being of less width than the width of said insulating support and the said forward pair of members being spaced  
55 apart farther than said rear pair, whereby said panel section may be drawn out from between said forward members, bus bars supported at the rear of said frame and having openings therein, and conducting studs pro-  
60 jecting from the rear of said frame-work and insulated therefrom, said studs being adapted to register with said openings when the panel section is in assembled position within said supporting frame.

65 9. Sectional battery charging apparatus

comprising rheostat units of uniform size and terminal arrangement and each capable of use individually or in conjunction with others, supporting frames each to support a number of said units and a set of bus-bars  
70 associated with each of said frames to serve for all units adapted to be accommodated thereby.

10. Sectional battery charging apparatus comprising a sectional rheostat, each unit  
75 thereof including a panel having controlling instrumentalities mounted upon the face thereof and a stack of resistance units mounted on the back of the same, and a unitary supporting frame affording a mounting  
80 for a plurality of said units and further affording support for each of said units at both the front and rear thereof.

11. Sectional battery charging apparatus comprising a sectional rheostat, the units  
85 thereof being uniform and each including a panel section with controlling instrumentalities mounted upon the face thereof and a stack of resistance units mounted upon the back thereof, a unitary frame to receive a  
90 plurality of said units and to afford a front and rear support for each and means to detachably and independently secure each of said units to said frame.

12. A panel section comprising an insulat-  
95 ing support, a plurality of resistance elements, means for supporting said elements and securing them to the rear of said supporting base, said resistance elements and said means being of less width than the  
100 width of said supporting base, a supporting frame within which said resistance elements and said means are supported, said base being secured to the front of said frame whereby it may be removed therefrom, bus bars  
105 arranged vertically and spaced from the rear of said frame, and conducting elements carried by said means and being connected to said bus bars.

13. A panel section comprising an insulat-  
110 ing base, a pair of brackets spaced apart and secured to the rear thereof, a transverse member secured to said brackets, and spaced from said base, a second transverse member parallel thereto and spaced to the rear there-  
115 of, bolts connecting said transverse members, and resistance grids mounted on said bolts.

14. A panel section comprising an insulat-  
ing base, a pair of brackets spaced apart and secured to the rear thereof, a transverse  
120 member secured to said brackets and spaced from said base, a second transverse member parallel thereto and spaced to the rear thereof, bolts connecting said transverse members, resistance grids mounted on said bolts, and  
125 conducting studs carried by the rearmost transverse member and insulated therefrom.

15. A panel section comprising a rectangular insulating base, a pair of substantially  
U-shaped supports secured thereto in verti- 130

cal position near opposite sides thereof, a transverse member secured to said U-shaped members, two pairs of bolts secured to said transverse member and projecting rearwardly therefrom, two sets of resistance grids mounted each on a pair of said bolts, a second transverse member to which the rear ends of said bolts are secured, terminal connections on said second transverse member,

and conducting studs projecting rearwardly therefrom. 10

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

ALBERT J. HORTON.

Witnesses:

W. L. SCULLY,  
J. C. VALENTINE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."