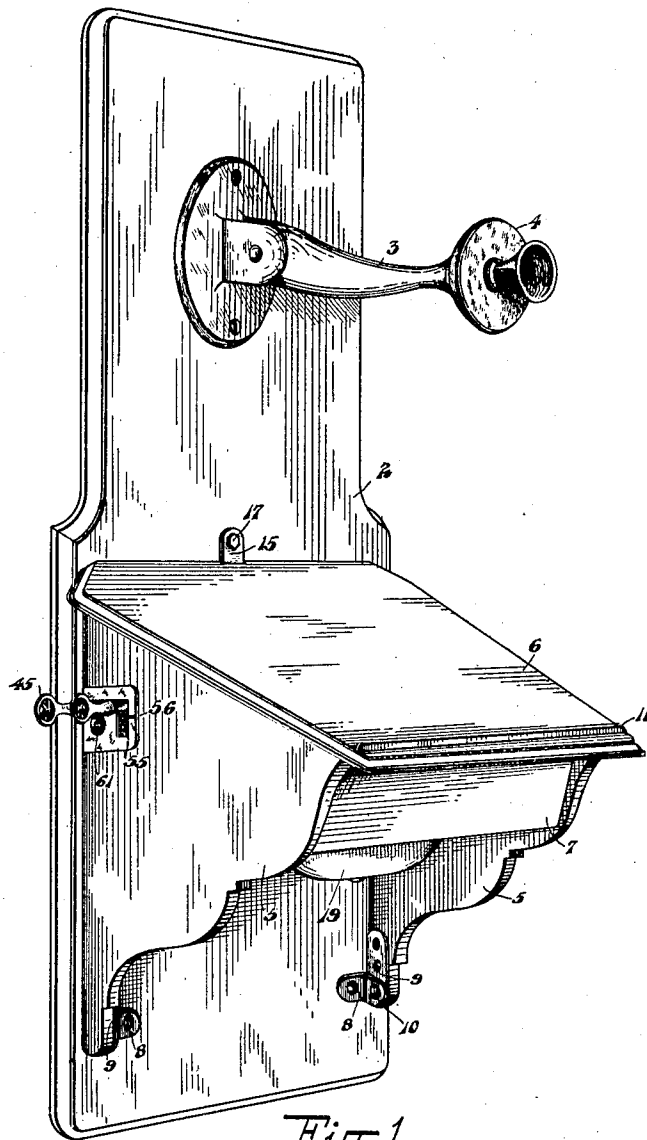


No. 871,485.

PATENTED NOV. 19, 1907.

W. W. DEAN.  
TELEPHONE WALL SET.  
APPLICATION FILED JUNE 16, 1903.

4 SHEETS—SHEET 1.



Witnesses.  
*P. H. Bonfield*  
*Kempster B. Miller*

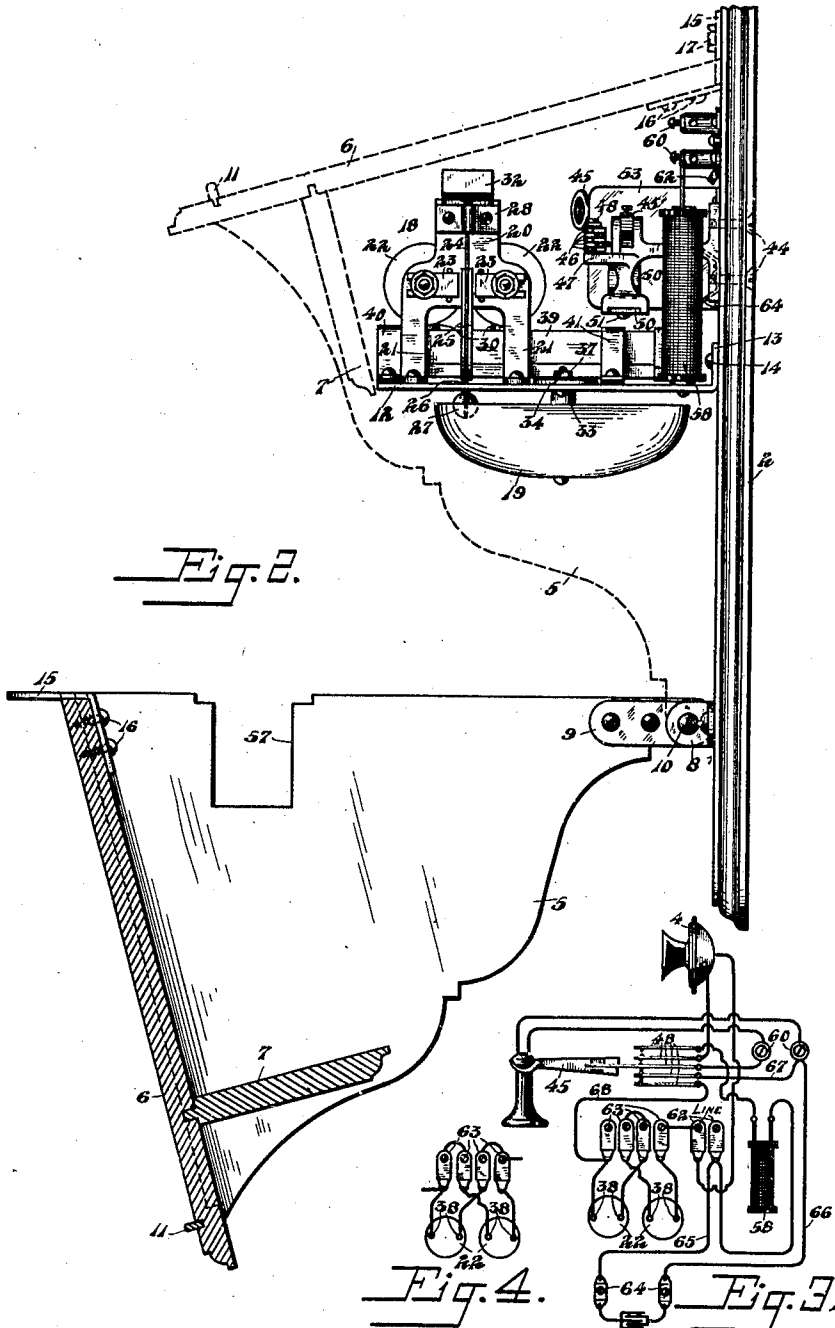
Inventor:  
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No. 871,485.

PATENTED NOV. 19, 1907.

W. W. DEAN.  
TELEPHONE WALL SET.  
APPLICATION FILED JUNE 15, 1903.

4 SHEETS—SHEET 2.



Witnesses.  
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*Samuel B. Miller*

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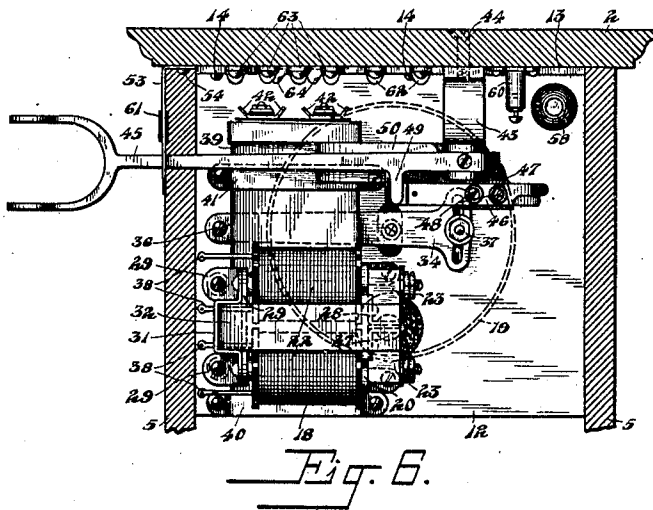
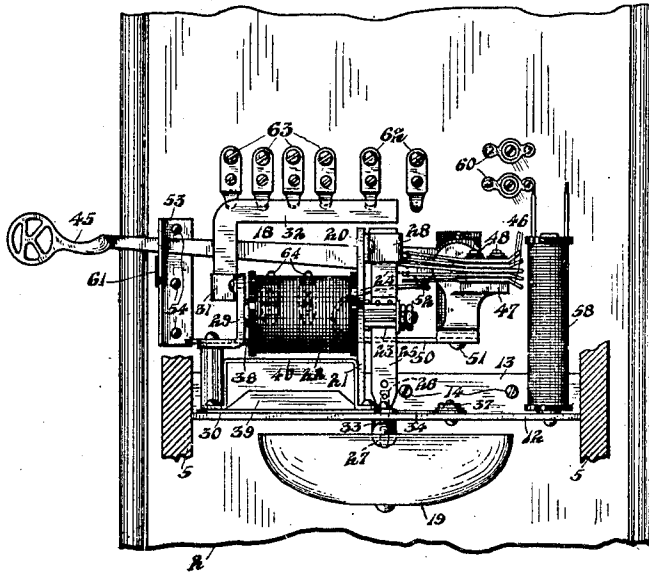
PATENTED NOV. 19, 1907.

W. W. DEAN.

TELEPHONE WALL SET.

APPLICATION FILED JUNE 15, 1903.

4 SHEETS—SHEET 8.



Witnesses.

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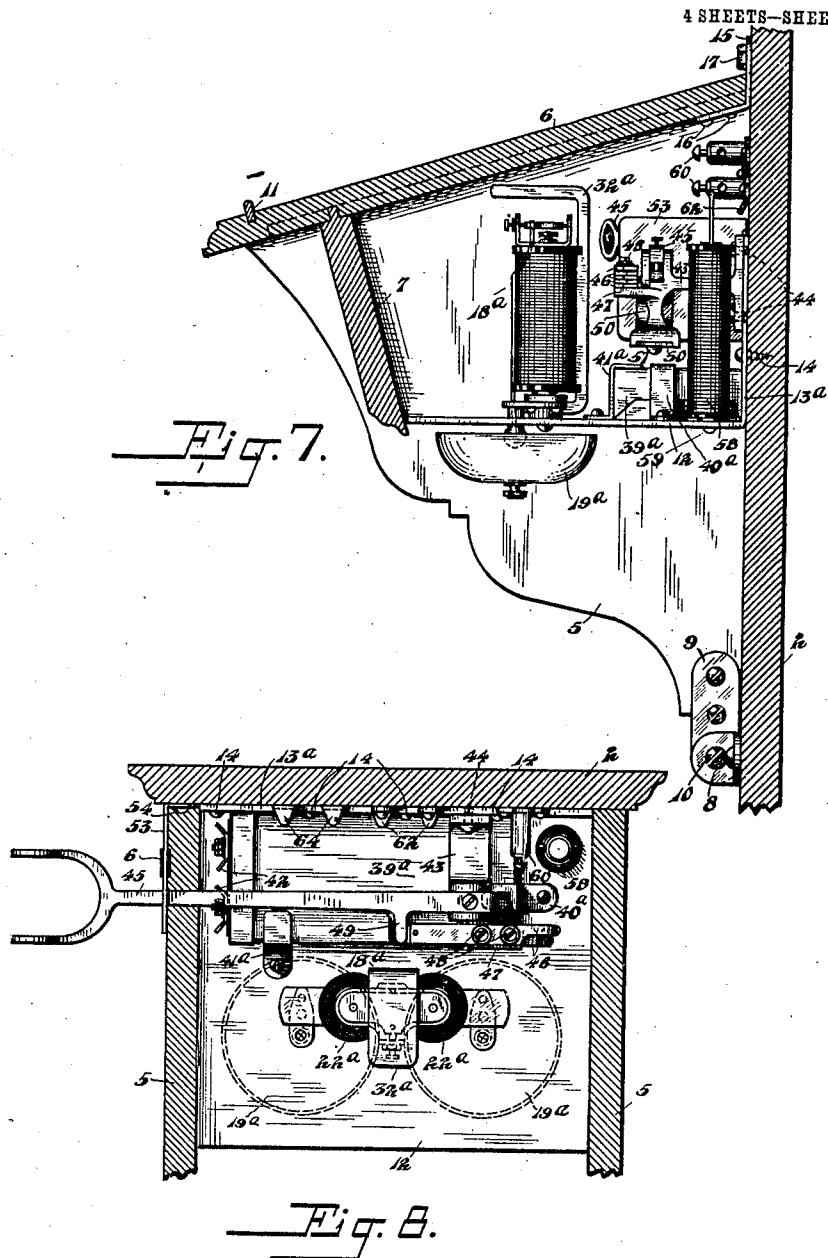
Attorney.

No. 871,485.

PATENTED NOV. 19, 1907.

W. W. DEAN.  
TELEPHONE WALL SET.  
APPLICATION FILED JUNE 15, 1903.

4 SHEETS—SHEET 4.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

WILLIAM W. DEAN, OF CHICAGO, ILLINOIS, ASSIGNOR TO KELLOGG SWITCHBOARD & SUPPLY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## TELEPHONE WALL SET.

No. 871,485.

Specification of Letters Patent.

Patented Nov. 19, 1907.

Application filed June 15, 1903. Serial No. 161,529.

*To all whom it may concern:*

Be it known that I, WILLIAM W. DEAN, a citizen of the United States of America, and resident of Chicago, county of Cook, and State of Illinois, have invented a certain new and useful Improvement in Telephone Wall Sets, of which the following is a specification.

My invention relates to improvements in telephone wall sets for use at subscribers' stations in telephone exchanges, and has for its general objects the provision of an apparatus or instrument of the class described that is convenient to manufacture, inspect and repair; that has few and simple parts, and that is durable and efficient as well as pleasing in appearance and inexpensive to manufacture.

One main object of the invention is to provide a construction in which the working parts of the instrument are inclosed normally but are adapted to be entirely exposed when the cover of the instrument is opened.

Another object is to mount all parts upon stationary rigid members of the instrument so that all connections may be permanent and are not required to be completed through hinges or other movable members of the set.

Still another object is to dispense with condenser boxes upon the face of the backboards of the instruments thereby cheapening the construction.

To the accomplishment of these objects and such others as may hereinafter appear, the invention consists in the novel parts and combinations of parts hereinafter described and particularly pointed out in the appended claims, reference being had to the accompanying drawings forming part of this specification in which the same reference characters are used throughout the several views to indicate like parts, and in which

Figure 1 is a perspective view of a subscriber's telephone wall set embodying my improvements; Fig. 2 is a side view of the lower portion of said set, showing the cover partially dropped down to expose the working parts of the set; Fig. 3 is a diagram of the circuits involved in the instrument; Fig. 4 is a detailed view of the bell connections; Fig. 5 is a front view of the working parts of the instrument with the cover broken away; Fig. 6 is a plan view of the same parts; Fig. 7

is a side view of the working parts of the wall set with a modified arrangement and in which an ordinary polarized bell is included, and Fig. 8 is a plan view of said modified set.

The backboard 2 of the instrument is preferably of the form shown in Fig. 1, upon the narrowed upper portion of which the transmitter arm 3 is mounted in the usual manner and carries the transmitter 4 at its free end. Upon the lower widened portion of the backboard a cover, consisting of the bracket shaped sides 5, sloping top 6 and the front plate 7, is hinged to said backboard at the lower points of said sides 5, said hinges consisting of the angle pieces 8 secured to the backboard and the straight pieces 9 secured to the inner sides of said bracket shaped sides 5, said pieces being pivotally joined by suitable hinge pins 10. A ridge 11 formed in any suitable manner occurs near the lower edge of said sloping top 6 to prevent papers and other material from slipping off the said top plate.

A shelf 12, consisting preferably of a sheet metal plate having an upturned edge 13 by means of which said shelf or plate is secured to the backboard by means of suitable screws or bolts 14, forms the lower portion of the receptacle or space in which the said working parts of the instrument are inclosed when the cover is in closed position, said plate, as indicated in Figs. 5 and 6 being of sufficient width to fit closely between the bracket sides 5 of the box when it is closed. The front edge of the shelf 12 also reaches to the front plate 7 of the cover when the latter is closed as indicated by dotted lines in Fig. 2, and as shown in full lines in Fig. 7. The cover may be dropped down as indicated in Fig. 2 although in practice it would hang lower than shown, to entirely expose the said shelf 12 and associated parts for purposes of inspection and repair and is held in closed position by means of a suitable clip 15 secured to the inner side of the top plate 6 by suitable screws 16 (see Fig. 2) and having an aperture in its upper end through which a screw or bolt 17 may be passed to fasten it to the backboard 2. The bell 18 is mounted upon the upper side of said horizontal plate 12, while its gong 19 is secured to the lower side thereof. The bell in this instance is of the vibrating reed tongue type, in which a front plate 20 is secured to

the said shelf 12 by the legs 21 and carries the front ends of the magnets 22 and their cores as well as the adjustable pole pieces 23 of said cores. The bell tongue consists of a reed 24 to which the armature pieces 25 are riveted which pieces carry at their free ends a flexible member 26 and upon the lower end of this member the ball or hammer 27 of the tongue is carried. The opposite end of the tongue is secured in place by a suitable clip 28 riveted to the other end of reed 24 and adapted to be removably secured to the upper end of said front plate 20 by means of suitable screws. The free end of the magnet coils are supported upon a suitable back plate 29 supported from the shelf 12 by means of the posts 30 and at its upper end a clamping strip 31 serves to secure in place the permanent magnet 32, the forward end of which extends into proximity with the fixed end of the reed tongue. The gong 19 is carried by a post 33 depending from a bar 34 pivoted at its rear end 36 and adjustably secured at its opposite end by means of a bolt 37 passing through a slot therein and through the plate 12, this arrangement providing for adjusting the position of the gong with reference to the hammer or ball of the bell. The terminals 38 of the magnets are connected by means of preferably insulated conductors with the terminal clips as hereinafter explained. A suitable condenser 39 is secured to the upper side of said shelf 12 by means of a clamping strip 40 at the forward end thereof, and another clamping strip 41 at the rear end, suitable terminals 42 being provided for said condenser. The condenser is as usual included in a metallic case to protect it from injury and to permit its convenient handling.

A suitable hook switch serves to change the circuits of the set from normal signaling condition to talking condition and vice-versa by the removal of the receiver from and its replacement upon the switch-hook. This switch comprises a standard 43 secured by suitable screws 44 to the backboard 2 of the set, and at its forward end is pivoted the switch hook 45. A bunched set of switch springs 46, consisting of a plurality of superposed leaf springs and insulating strips, are secured together to a ledge 47 of said standard at the side of the hook lever by means of screws 48. The circuit conductors are adapted to be connected to the rear end of these springs while their forward ends are suitably operated by a lug 49 upon the lever 45 which engages one of the intermediate springs that extends beyond the ends of the other springs. In addition, a lifting spring 50 is secured at one end by a screw 51 to a downwardly extending portion of said standard and extends forwardly and is then bent upwardly and backwardly so that its free end 52 engages beneath a suitable lug upon the lower side of said switch-hook 45. This lifting spring

is so adjusted that when the receiver is upon the hook said spring is overcome and the hook is depressed, and when the receiver is removed therefrom the spring lifts the hook to change the springs 46 from normal position to talking position. The forward end of the hook passes through a plate 53, which I term an escutcheon plate, secured to the backboard by screws 54 and having a slot 55 in its forwardly extending portion through which the arm of the switch-hook passes and in which it vibrates. The outer strip of metal of said escutcheon plate is severed at 56 to permit the hook lever to be sprung into the said slot. A notch 57 is provided in the side 5 of the cover to permit the said cover to be readily opened and closed without interference from the hook lever, said notch being covered by the escutcheon plate when the cover is closed.

A retardation or other coil 58 is mounted upon the upper side of said shelf 12 and is held in place by a suitable screw 59 passing into the lower end of its core. The receiver binding posts 60 are mounted upon the backboard within the inclosure of the cover. The receiver cord is provided with tips in the usual manner adapted to be connected with said binding posts 60, said cord being passed through an aperture 61 in the escutcheon plate, which aperture is preferably provided with an insulating bushing to prevent wear upon the covering of the receiver cord and in case of such wear to prevent short circuiting the strands of the cord. The line terminals 62 in the form of metal clips are secured to the backboard 2 and the ends of the conductors are adapted to be soldered thereto. Additional clips 63 are arranged to be connected with terminals of the bell coil magnets by means of which, as hereinafter explained, said magnets may be connected either in parallel or in series. Other terminals 64 are carried by the backboard and are connected with the condenser 39. For the sake of clearness the conductors running between these various terminals and clips have been omitted in Figs. 1, 2, 5 and 6 but in Fig. 3 I have shown in diagram how the various parts are connected. These conductors are for the most part placed in grooves in the back of the backboard, but they extend in the form of insulated conductors from the terminals of the instruments to suitable apertures through said backboard and communicating with the said grooves.

The receiver in Fig. 3 is shown upon the hook so that the circuits are in condition for receiving a call from the central office but are not in condition for talking. Tracing the circuit therefore from the right hand line terminal 62, it includes the conductor 65, clip 64, condenser 39, clip 64, conductor 66, binding post 60, conductor 67, the lower springs 48, conductor 68, clip 63, the coils 22

of the bell in series and thence to the left hand clip 62. The paths for current through the retardation coil 58 and through the transmitter 4 stand normally open at the upper springs 48 of the switch-hook. When the receiver is removed from the hook, the path for current through the bell coils is opened and the paths for current through the retardation coil, transmitter and receiver are closed at the upper springs. It is thought unnecessary to trace these circuits in detail.

Fig. 4 indicates the bell clips 63 and shows that by merely connecting the outer terminals 63 and disconnecting the two inner terminals the bell coils are connected in parallel. This is for the purpose of adjusting the retardation of said bell coils to a greater or less extent to approximately attune the bell branches to the frequency of the ringing currents.

The bell shown in this apparatus is, as stated, of the tuned reed type, and is adapted to be operated only at a definite frequency. It is therefore essential to impress upon the line in which the said bell is placed ringing current of a frequency corresponding to such definite rate of actuation of the bell. In order to change the instrument to operate at a different frequency it is only necessary to remove the reed tongue as a whole and apply thereto a tongue having a different characteristic rate of operation. This different rate of operation is preferably obtained by varying the size of the balls or hammers of the reed.

In Figs. 7 and 8 I mount the whole apparatus on the shelf 12 as is indicated, by extending the upper portion 13<sup>a</sup> of the said shelf at a considerable height. It is secured as usual to the backboard by the screws 14. In this form an ordinary polarized bell 18<sup>a</sup> is employed in which a pair of gongs 19<sup>a</sup>, 19<sup>a</sup>, are adjustably carried upon the lower face of said shelf 12, while the framework of the bell is mounted upon the upper side, said framework comprising, as usual, a pair of coils 22<sup>a</sup> operating an ordinary pivoted tongue carrying a ball at its lower end vibrating between the said gongs 19<sup>a</sup>. The armature of this bell is polarized by a permanent magnet 32<sup>a</sup> in the usual manner. A condenser 39<sup>a</sup> is secured in place by suitable clamping strips 40<sup>a</sup> and 41<sup>a</sup>. The hook-switch is secured in place upon the portion 13<sup>a</sup> of the shelf 12 although it is apparent that it could be supported from beneath by properly designing the standard of the switch. Only a single pair of bell terminal clips need be provided. Otherwise the arrangement is substantially the same as in the previous figures and will not be further described. The circuit arrangement for this device need not differ from that of the former apparatus.

Having described my invention what I

claim as new and desire to secure by Letters Patent is:—

1. In a telephone wall set, the combination with a backboard, of a shelf secured thereto, a box-like cover fitting over said shelf and hinged at one edge to permit it to be opened to expose the shelf and parts thereon exposed upon four sides, said shelf forming one wall of the space inclosed by the cover when closed, a bell mechanism mounted on the inner side of said shelf and the gong of the bell on the outside of the same, whereby when the cover is closed the bell magnets and coöperating parts are inclosed and the gong remains outside, substantially as described.

2. In a telephone wall set, the combination with a support, of a shelf secured thereto, a box-like cover fitting over said shelf and hinged at its lower edge to permit it to swing down to expose said shelf, said shelf forming the lower wall or side of the space inclosed by the cover when closed, a bell mechanism having its magnets mounted in the upper side of said shelf and its gong on the lower side whereby when the cover is closed the bell magnets and coöperating parts are inclosed and the gong is on the outside, substantially as described.

3. In a telephone wall set, the combination with a support, of a shelf secured to said support, said shelf consisting of a sheet metal plate having a portion of its inner edge bent at right angles to form a means of securing the same to the support, a box-like cover fitting over said shelf and hinged at its lower edge to permit it to swing down to expose said shelf, said shelf forming the lower wall of the space inclosed by the cover when closed, and a bell mechanism having its magnets mounted on the upper side of said shelf and its gong on the lower side whereby when the cover is closed the bell magnets and operating parts are inclosed and the gong is on the outside, substantially as described.

4. In a telephone wall box, the combination with a supporting back, of a shelf secured to and projecting from said back and forming a portion of the inclosure for the box, telephone apparatus mounted upon said shelf, a cover consisting of a top piece, a front piece and side pieces secured together, said cover fitting closely over said shelf to inclose the working parts of the set when closed and being bodily removable therefrom to expose said parts, whereby said parts are accessible from the front, top and sides, substantially as described.

5. In a telephone wall box, the combination with a supporting back, of a shelf secured to and projecting from said back; working parts of the telephone upon said shelf, a cover consisting of a top, side pieces and a front piece, all rigidly secured together; said cover fitting closely over said

shelf to inclose the working parts of the set when closed and being bodily removable to expose the said parts, whereby said parts are exposed on four sides, said shelf forming the bottom wall of the space so inclosed by the cover, substantially as described.

6. In a telephone wall box, the combination with a supporting back, of a shelf secured to and projecting from said back; a cover consisting of a top, side pieces and a front piece, all rigidly secured together; said cover fitting closely over said shelf to inclose the working parts of the set when closed and being hinged at its lower edge to permit the same to swing down to expose the said parts, said shelf forming the bottom wall of the space so inclosed by the cover, substantially as described.

7. In a telephone wall box, the combination with a supporting back, of a horizontal shelf secured to said back; a cover consisting of a top, side pieces and a front piece, all rigidly secured together and hinged at its lower edge; the sides of said cover fitting closely to the side edges of said shelf and the front plate fitting the front edge of the shelf when the cover is closed and thereby forming an entirely inclosed space in which the shelf forms the bottom wall, and working parts of the instrument inclosed within said space, substantially as described.

8. In a telephone wall box, the combination with a supporting back, of a horizontal shelf formed of a sheet metal plate with its inner edge turned up by means of which it is rigidly secured to the said back said shelf forming the bottom of the box; a cover consisting of a top, side pieces and a front piece, all rigidly secured together and hinged at its lower edge; said cover fitting closely at the sides to the edge of the shelf and at its front piece to the front edge of the shelf when closed, and working parts of the instrument inclosed within the space surrounded by the cover and shelf, substantially as described.

9. In a telephone wall box, the combination with a supporting back, of a projecting shelf secured to the back and forming a portion of the inclosure of said box; a cover con-

sisting of a sloping top, bracket-shaped side pieces and a front plate extending between the inner faces of said bracket sides and engaging the top, all rigidly secured together; hinges at the lower points of said bracket-shaped sides to hinge the cover so that it may be dropped down to expose the working parts of the set which are mounted within the space inclosed by the cover and shelf, substantially as described.

10. In a telephone wall box, the combination with a backboard, of a suitably-supported shelf and a cover for said shelf consisting of cooperating side pieces rigidly secured together, said cover fitting closely over said shelf to inclose the working parts of the set when closed and being bodily removable to expose said parts upon four sides, said shelf forming the bottom wall of the space so inclosed by said cover, substantially as described.

11. In a telephone wall box, the combination with a suitable backboard, of a suitably-supported shelf and an inclosing cover for said shelf adapted to form with said shelf the exterior walls of the telephone box, said cover being bodily removable from said shelf to expose the working parts of the telephone upon four sides, substantially as described.

12. In a telephone wall box, the combination with a supporting back, of a shelf secured to and projecting therefrom and forming a portion of the inclosing wall of said box, a cover consisting of a sloping top, bracket-shaped side pieces and a front plate extending between the inner faces of said bracket-shaped sides and engaging the top, all rigidly secured together, hinges at the lower points of said bracket-shaped sides to pivotally connect the cover so that it may be dropped down to expose the working parts of the set upon four sides, substantially as described.

Signed by me at Chicago, county of Cook, State of Illinois, this 12th day of June, 1903.

WILLIAM W. DEAN.

Witnesses:

GAZELLE BEDER,  
ROBERT LEWIS AMES.