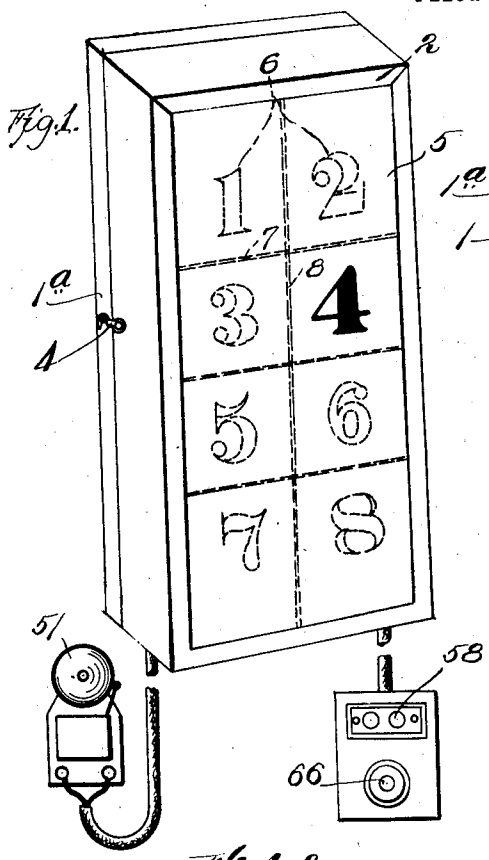
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O. HAMLIN

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Fig. 1.



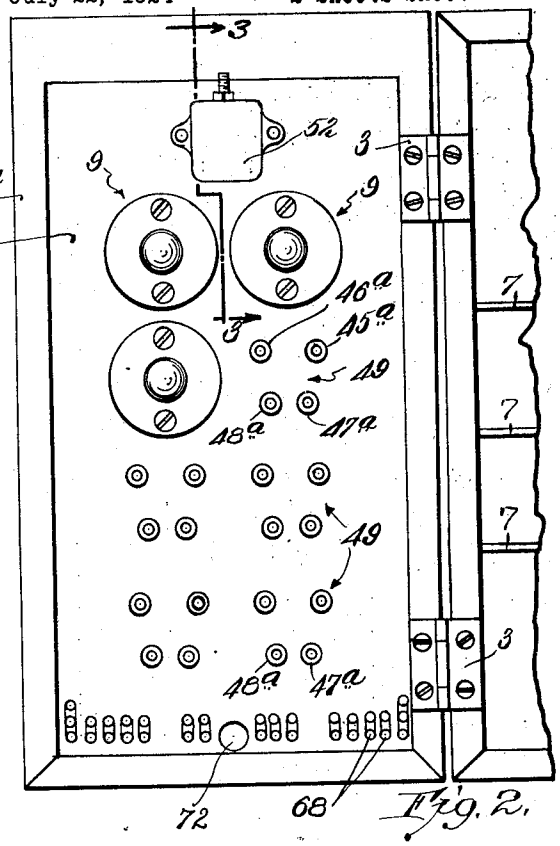


Fig. 2.

Fig. 3

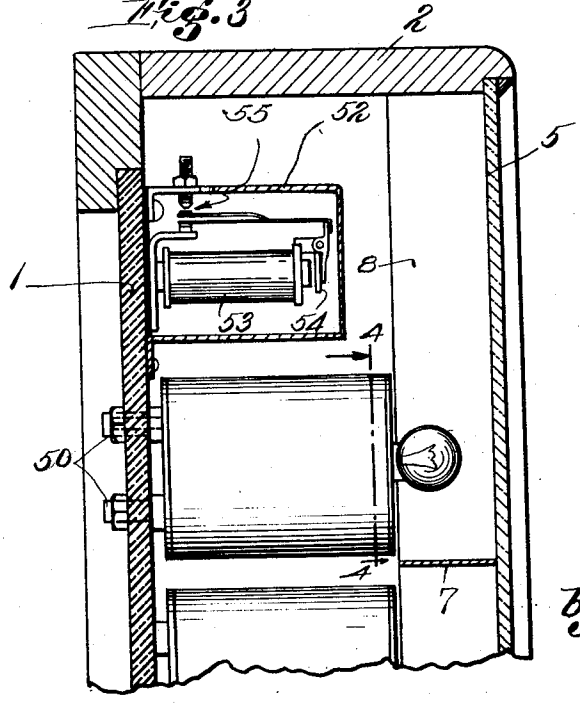
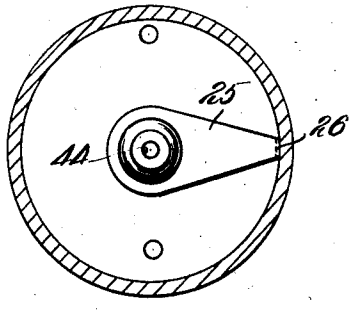


Fig. 4



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Fig. 5

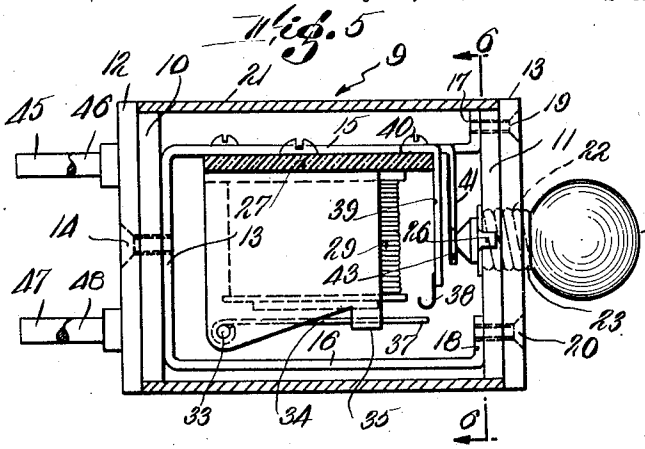


Fig. 9

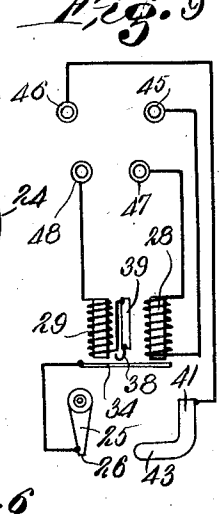


Fig. 8

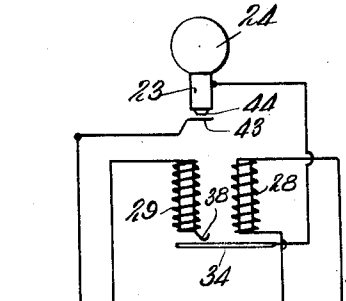


Fig. 7

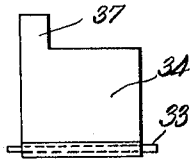
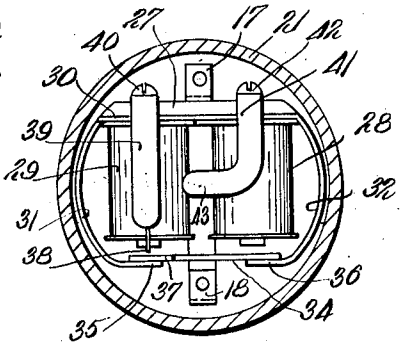


Fig. 6



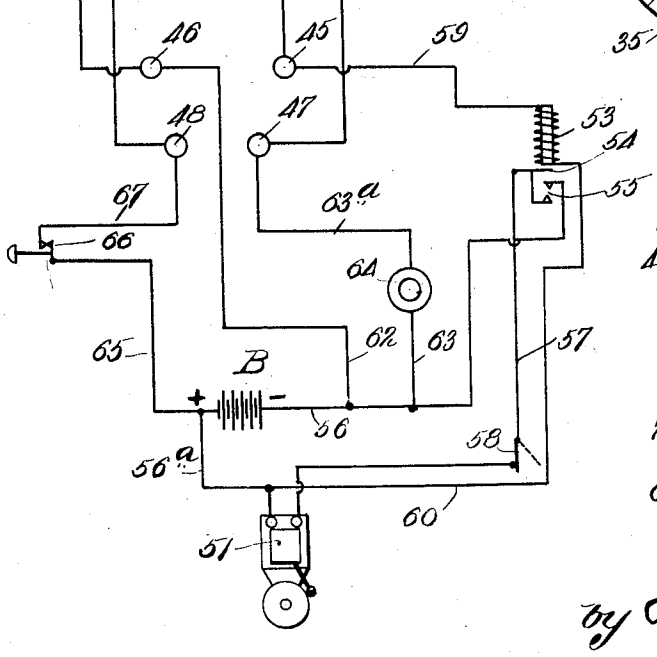
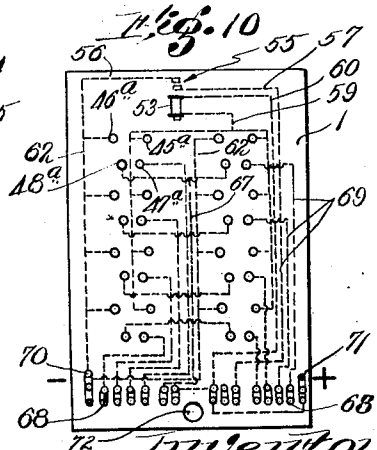


Fig. 10



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Patented Aug. 28, 1928. 1,682,332

UNITED STATES PATENT OFFICE.

OTTO HAMLIN, OF QUINCY, MASSACHUSETTS.

ANNUNCIATOR.

Application filed July 22, 1924. Serial No. 727,439.

This invention pertains to signalling devices, and relates more particularly to annunciators of the general type commonly employed in hotels, offices, factories and other establishments wherein information as to the needs of or conditions in any room or division of such establishment is to be transmitted to a central office or station.

Ordinarily the several signals corresponding to the various rooms or sending stations are mounted upon a common support or base in compact arrangement to permit the annunciator to serve as many signal stations as possible without unduly increasing its dimensions. When electrically lighted lamps are employed to give the signals it is usual to provide a relay switch actuated by a relatively low voltage push button circuit leading from each room or sending station for cutting in a high voltage circuit to light the lamp and as each lamp should remain lighted even after depression of the push button has ceased, automatic means is commonly provided for keeping the lamp circuit closed until purposely broken at the central station or office by means of a reset switch or device. Moreover, it is often desirable to combine an audible signal with the lamp in order to attract attention to the latter but under some circumstances the sounding of the signal may be undesirable so that provisions should be made for preventing its actuation at will.

As the number of lamps may be very large the wiring of the annunciator device is frequently of great complexity and repairs or changes in arrangement are necessarily slow and difficult and often result in keeping the entire annunciator out of use for a long period.

Usually the fixed wiring of such a device needs little attention but the removable parts of the controlling switch or relay as well as the switch contact points and associated elements frequently need repair or replacement, and it is not always easy, as above noted, when all the parts are permanently connected, to determine the cause of the trouble or to gain access to the defective part.

Furthermore, it is sometimes desirable to render the signals corresponding to certain rooms or sending stations temporarily inoperative without disturbing the permanent wiring or to provide a signal for a station previously unprovided therewith but without changing the arrangement of the permanent wiring or disturbing or interrupting the operation of the other circuits of the system.

While it is common to employ a high voltage circuit for lighting the lamps this is not altogether desirable as it increases the initial cost of the apparatus due to the added complexity of the wiring and makes it necessary to employ greater care in insulating the parts as well as in maintaining the switch contacts in proper conditions.

Objects of the present invention are to provide an annunciator device wherein the lamps may be lighted by means of the same low voltage current which is used in the push button circuits leading from the rooms or sending stations; to provide lamp controlling switches mounted upon independent supports so that they may readily be shifted to correspond to selected rooms or sending stations; to mount the lamps upon such independent supports so that they, with the switches, may readily be removed from the base board of the annunciator without disturbing the wiring or substantially delaying the operation of the annunciator as a whole; to provide novel lamp-controlling switches of durable character together with individual casings therefor; and in general to provide an annunciator device of simple and reliable character and of compact form capable of caring for the needs of a greater or lesser number of rooms or sending stations.

In the accompanying drawings one preferred embodiment of the invention is illustrated by way of example and in such drawings:—

Fig. 1 is a perspective view showing the external appearance of the signal box of the annunciator as well as the audible signalling device, the reset switch, and the switch for cutting out the audible signal;

Fig. 2 is a front elevation of the signal box to larger scale with its cover open and broken away and showing groups of sockets for receiving the lamp-supporting casings, and indicating some of said casings in position;

Fig. 3 is a fragmental vertical section to larger scale substantially on the line 3—3 of Fig. 2.

Fig. 4 is a vertical section to larger scale on the line 4—4 of Fig. 3;

Fig. 5 is a longitudinal vertical section

through one of the lamp-supporting casings showing a lamp mounted thereon;

Fig. 6 is a vertical section substantially on the line 6—6 of Fig. 5;

Fig. 7 is a bottom plan view of an armature plate forming a feature of the invention;

Fig. 8 is a diagrammatic view illustrating the wiring connections for a single push button circuit;

Fig. 9 is a diagrammatic view showing the wiring connections of one of the lamp supporting casings, and

Fig. 10 is a diagrammatic view showing the permanent wiring of the base plate of the signal box.

Referring to the drawings, the numeral 1 indicates a base plate preferably of insulating material and mounted in a frame 1ª, the base plate and frame constituting the bottom or rear wall of the vertically disposed signal box 2. In the embodiment of the invention herein disclosed the box proper is hinged to the frame 1ª by means of hinges 3 so that it may be swung open as shown in Fig. 2 to expose the front face of the base member 1. Any suitable form of locking device, for example the hook 4, may be provided for securing the front and rear parts of the box in closed position.

The front wall of the box preferably consists of a light-transmitting plate 5, for example frosted glass, having a plurality of symbols 6 corresponding to the several rooms or sending stations which the annunciator device is intended to serve. The interior of the box is preferably divided by means of transverse and vertical partitions 7 and 8 respectively into compartments corresponding to the several symbols upon the front plate 5. As here shown these partitions are carried by the swinging front member of the box, so that when the box is open the partitions are removed from before the base member 1.

Each of the said compartments of the box is adapted to contain a lamp-supporting casing 9 shown in detail in Figs. 5 and 6. Each lamp-supporting casing preferably consists of a pair of spaced heads or disks 10 and 11, preferably of insulating material, and having radially projecting circumferential flanges 12 and 13 respectively. These disks or heads are held in spaced relation by means of a frame of substantially U-shape having its closed end 13 secured by one or more screws or other fasteners 14 to the disk 10 and provided with substantially parallel legs 15 and 16 which terminate in feet 17 and 18 respectively. The feet 17 and 18 are secured to the disk 11 by means of screws or other fasteners 19 and 20 respectively. Preferably the space between the opposed surfaces of the disks 10 and 11 is enclosed by a metallic shell 21 of cylindrical form whose opposite ends abut against the flanges 12 and 13 of the disks and whose outer surface is preferably flush with the outer edges of such flanges.

The disk 11 is provided with an aperture, preferably at its center, having a metallic lining 22 preferably screw-threaded for the reception of the base 23 of an electric lamp 24. This metallic lining or socket member is preferably provided with the tongue 25 (Fig. 4) extending radially of the inner face of the disk 11 and terminating in a lip 26 which is interposed between the disk 11 and the metallic shell 21 and thus forms an electrical connection between the shell 21 and the lamp socket.

The upper leg 15 of the U-shaped frame supports an insulating plate 27 to which a pair of electromagnets 28 and 29 are secured. The magnets are arranged between the horizontal plates of the upper and lower legs 15 and 16 of the frame with their cores substantially parallel to each other and terminate in pole pieces lying in the same horizontal plane.

Between the upper ends of the magnets and the insulating member 27 a thin metallic plate 30 is interposed. This plate 30 is provided with oppositely extending members 31 and 32 which are curved substantially concentric with the inner surface of the shell 21 and which partially embrace the magnets and form a housing therefor. The parts 31 and 32 are provided with aligned journal openings for the reception of the opposite ends of a pivot pin 33 upon which an armature plate 34 is mounted. This armature plate is common to the two magnets 28 and 29 and is normally supported in the position shown in Figs. 5 and 6 by means of inwardly directed ears 35 and 36 carried by the members 31 and 32 respectively. When either magnet is energized the armature swings upwardly about the axis of the pivot pin 32, but when released it drops onto the ears 35 and 36 under the action of gravity.

The armature plate 34 is provided with a contact member 37 adapted to engage a flexible contact 38 carried by a support 39 secured by means of a screw 40 to the insulating plate 27. The contact elements 37 and 38 constitute the poles of a lamp controlling switch as will hereinafter be further described.

A second support 41, preferably of relatively flexible metal, for example spring brass, is secured by means of a screw 42 to the insulating plate 27 and is provided with a terminal portion 43 which is bent to lie opposite to and to make contact with the central contact 44 of the lamp base when the lamp is screwed into its socket 22 in the disk 11.

The disk 10 at the opposite end of the

casing is furnished with four metallic contact plugs 45, 46, 47 and 48 respectively. The plugs 45 and 47 constitute the terminals of the coil of the magnet 28. The contact plug 48 constitutes one terminal of the coil of the magnet 29, the other terminal of such magnet being electrically connected to the support 39 of the contact 38. The contact plug 46 is electrically connected to the contact member 43 which engages the central contact of the lamp base as just described while the lamp socket is electrically connected by means of a suitable wire 34ª or in any other desired manner to the contact 37 carried by the armature 34.

Referring particularly to Fig. 2 the base plate 1 of the signal box is provided with groups 49 of metal lined contact sockets each group comprising four sockets 45ª, 46ª, 47ª, and 48ª, corresponding to the contact plugs of the lamp-supporting casings. In order to assure the mounting of the casings upon the base in proper position with the armature plate 34 resting upon the ears 35 and 36, it is preferred to arrange the contact plugs upon the disk 10 unsymmetrically with relation to the axis of the disk, the lower pair of plugs, as illustrated, being closer together than the upper pair of plugs, so that upon mounting the casing upon the base 1 the plugs can only be inserted in the sockets in the base in a predetermined position, but as the sockets of each of the groups 49 are similarly disposed and as the plugs upon each of the lamp-supporting casings are correspondingly arranged it is possible to interchange the casings and to shift them from one group of sockets to the other at will. Preferably the sockets are provided with individual binding posts 50 upon the rear side of the base 1 and the permanent wiring of the signal box is mounted upon the rear side of the base as indicated in dotted lines in Fig. 10, where it is not exposed to view or to accidental injury.

A bell 51, which may be located at any convenient point, is herein illustrated as constituting the audible signal. In order that this bell may be prevented from operating without disturbing the function of the remainder of the apparatus, it is preferred to control the bell by means of a relay device. This relay device is mounted in a casing 52 preferably disposed in the upper part of the signal box as shown in Figs. 2 and 3. The relay device comprises an electromagnet 53 having an armature 54 which controls a normally open switch 55. One pole of this switch is connected by means of a wire 56, Fig. 8, to one pole of a battery B or other convenient source of electrical energy. The other pole of the battery is connected by means of a wire 56ª to the bell 51. From the bell 51 a wire 57 extends to the opposite pole of the switch 55. In the wire 57 or, if preferred in the wire 56, a switch 58 is provided which may be operated manually to open or close the bell circuit.

One terminal of the coil of the electromagnet 53 is connected by means of a wire 59 with the socket 45ª while the other terminal of the magnet coil is connected by a wire 60 to the wire 56ª. A wire 62 extends from the wire 56 and connects the battery with the socket 46ª of the base board while another wire 63 connects the wire 56 to a push button switch 64 located in the room or sending station corresponding to the particular group of base board sockets under consideration. From the push button switch 64 a wire 63ª extends to the base board socket 47ª.

The wire 56ª is connected by means of a wire 65 to one pole of the normally closed reset switch 66, preferably of push button type, which may be mounted conveniently upon the same support as the bell-controlling switch 58. From the other pole of the reset switch a wire 67 leads to the base board socket 48ª. Preferably the wires 63ª are not directly connected to the several sockets 47ª but rather to binding posts 68 (Fig. 10) disposed near the bottom of the signalling box and which, if desired, may be lettered or numbered in accordance with the symbols upon the front of the box in order to identify them. The socket 47ª of each group is then connected by means of a wire 69 upon the back of the box with the corresponding binding posts 68.

Similarly binding posts 70 and 71 may be provided at the sides of the base 1 for connection to the other wires leading to the battery and other parts outside the box, such binding posts being connected to the proper sockets by wires upon the back of the box. Preferably the box is provided with an opening 72 through which the outside wires, for example wire 63ª may be led into the box for connection to the several binding posts 68, 70, 71, etc.

The operation of the device is substantially as follows, reference being had to the diagram in Fig. 8. Normally the contact members 43 and 44 are in engagement,—the contact elements of the reset switch 46 engage each other,—the switch 58 is closed,—the switch 55 is open,—the armature 34 is at its lowermost position, thus opening the switch comprising the contact members 37 and 38,—and the push button switch 64 is open.

To send a signal to the central office the push button 64 is depressed closing the circuit at this point through the wires 63ª, the socket 47ª, the plug 47, the coil of switch closing magnet 28, the plug 45, the socket 45ª, the wires 59, the coil of the relay magnet 53, the wires 60 and 56ª, the battery B and the wire 63. As soon as the coil of the

magnet 28 is thus energized the armature 34 is drawn upwardly until the switch comprising the contacts 37 and 38 is closed. This completes an electrical circuit through the switch points, the support 39, the coil of the magnet 29, the plug 48, the socket 48ª, the wire 67, the reset switch 66, the wire 65, the battery B, the wires 56 and 62, the socket 46ª, the plug 46, the lamp contacts 43 and 44, the filament of the lamp, the socket 22 and the armature 34. The lamp is thus lighted and at the same time the magnet 29 is energized and holds the armature 34 in its upper position, keeping the switch contacts 37 and 38 in engagement.

At the same time that the magnet 28 is energized the relay magnet 53 is energized, thus closing the switch 55 and completing the bell circuit through the wire 57, the normally closed switch 58, the bell 51, the wire 56ª, the battery B, and the wire 56. As the magnet 28 is energized only temporarily, and so long as the push button 64 is depressed the circuit through such magnet as well as through the relay coil 53 is usually immediately broken and the bell stops ringing and the magnet 28 releases the armature 34. The latter, however, is now maintained as above stated in its upper position by the magnet 29. If, for any reason, it be desired to dispense with the bell, the switch 58 is opened and although the relay magnet 53 is energized at each time the push button 64 is depressed the bell circuit remains open and the bell is silent.

When the operator at the central station has noted the signal he then opens the lamp circuit at the reset switch 66. This immediately deenergizes the switch-retaining magnet 29 and permits the armature 24 to drop, thus breaking the circuit between the parts 37 and 38, and restoring the system to its original condition.

While in Fig. 8 the circuit for but a single push button has been illustrated, it is to be understood that the several groups 49 of sockets in the base board are similarly connected, through wires attached to the binding posts 68, to push buttons corresponding to the various rooms or stations to be served, and while individual wiring may be employed throughout the connections it is to be understood the trunk wires will preferably be used wherever possible to save complication and trouble in making the connections.

It is also to be understood that the specific connections shown in Fig. 8 and above described need not necessarily be employed, so long as the desired circuits are maintained, and furthermore that the shapes of the various parts herein disclosed as well as their relative arrangements and proportions and the materials of which they are made may be varied as circumstances may demand, or as experience may show to be expedient.

While, as here shown, the signal box contains but eight compartments, it is contemplated that the number of compartments may be increased or diminished to any desired extent with a corresponding change in the dimensions of the parts or the number of groups of sockets provided. It is also clear that the grouping of said sockets may be changed, if desired, and that while, as here shown, the sockets are mounted upon the base and the plugs upon the lamp-supporting casings, a reversal of this arrangement might be employed if desired.

I claim:

1. An annunciator device having a removable lamp supporting casing comprising spaced heads, and a frame disposed between the heads, the frame having an elongate member supporting an electromagnet and a housing partially embracing the magnet, said housing having spaced aligned bearings, an armature mounted upon a pivot member journalled in said bearings, and a stop member carried by the housing to limit movement of the armature away from the magnet.

2. An annunciator device having a removable lamp supporting casing provided with spaced heads, a frame disposed between the heads comprising a U-shaped support having its closed end secured to one head and the ends of its legs secured to the other head, an electromagnet mounted upon one leg of the support, a housing partially embracing the magnet, an armature pivotally supported by the housing, and oppositely directed ears carried by the housing for limiting movement of the armature away from the magnet.

Signed by me at Boston, Massachusetts, this fifteenth day of July, 1924.

OTTO HAMLIN.