

B. L. BOBROFF,
TELEGRAPHY,
APPLICATION FILED JULY 6, 1914.

1,157,839.

Patented Oct. 26, 1915.

3 SHEETS—SHEET 1.

Fig. 1.

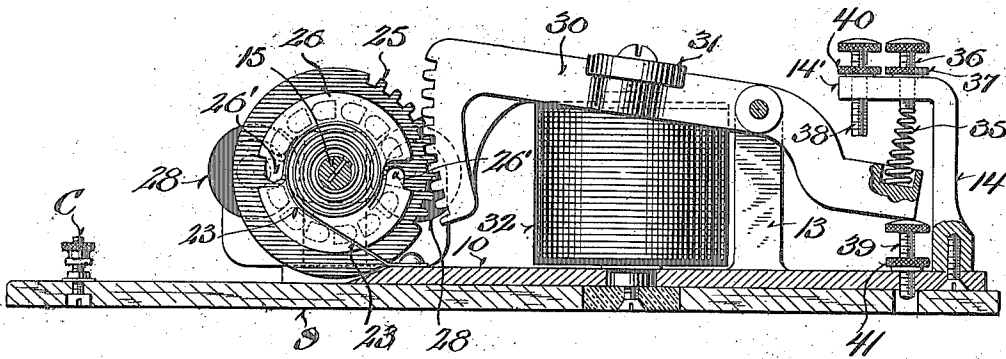
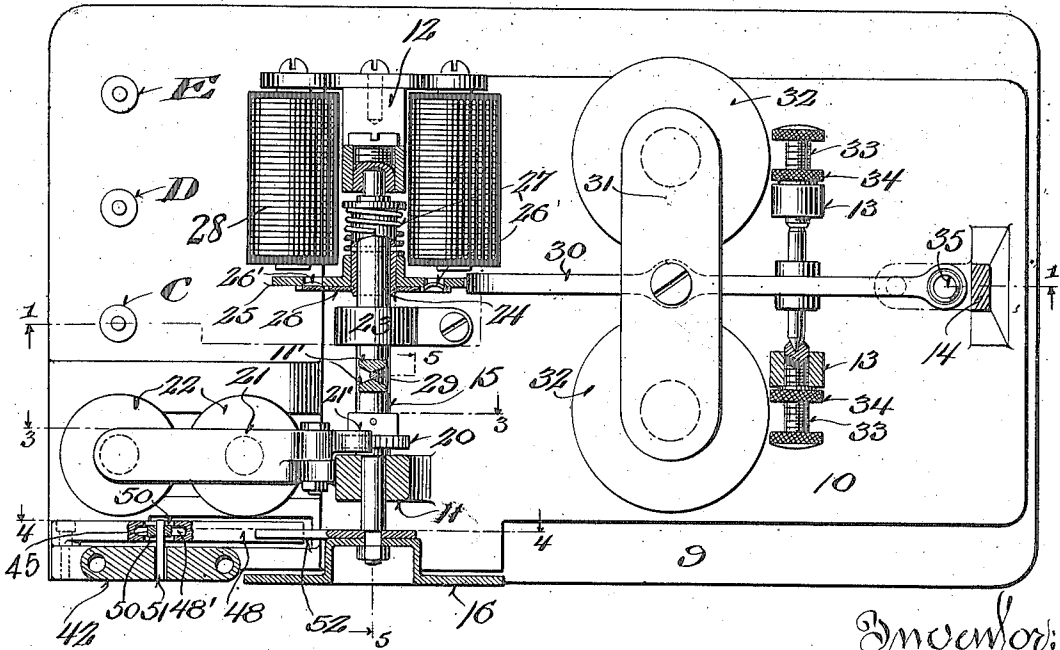


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 3.

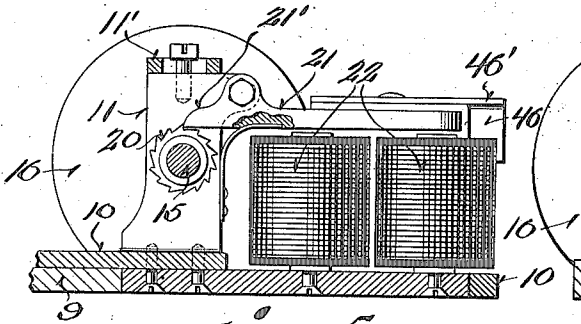


Fig. 4.

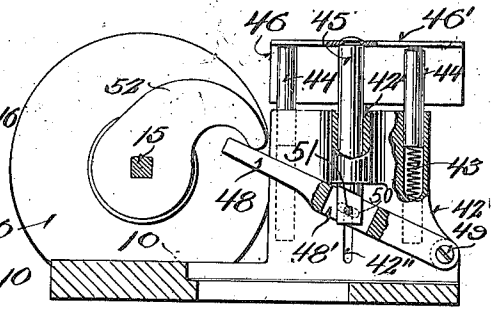


Fig. 5.

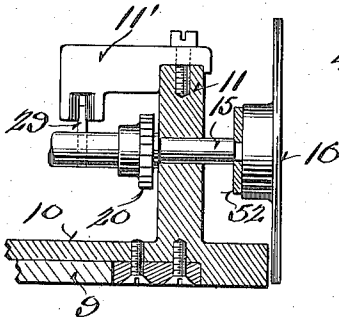


Fig. 7.



Fig. 6.

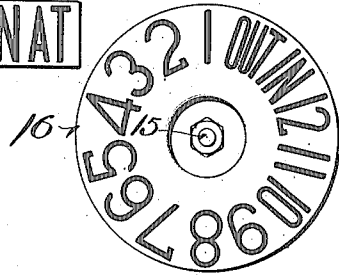
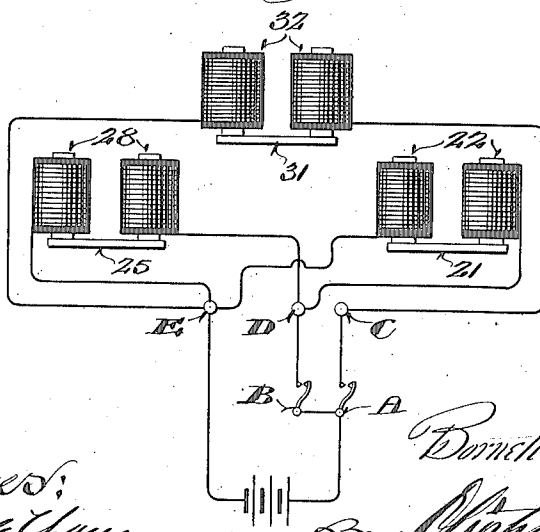


Fig. 8.



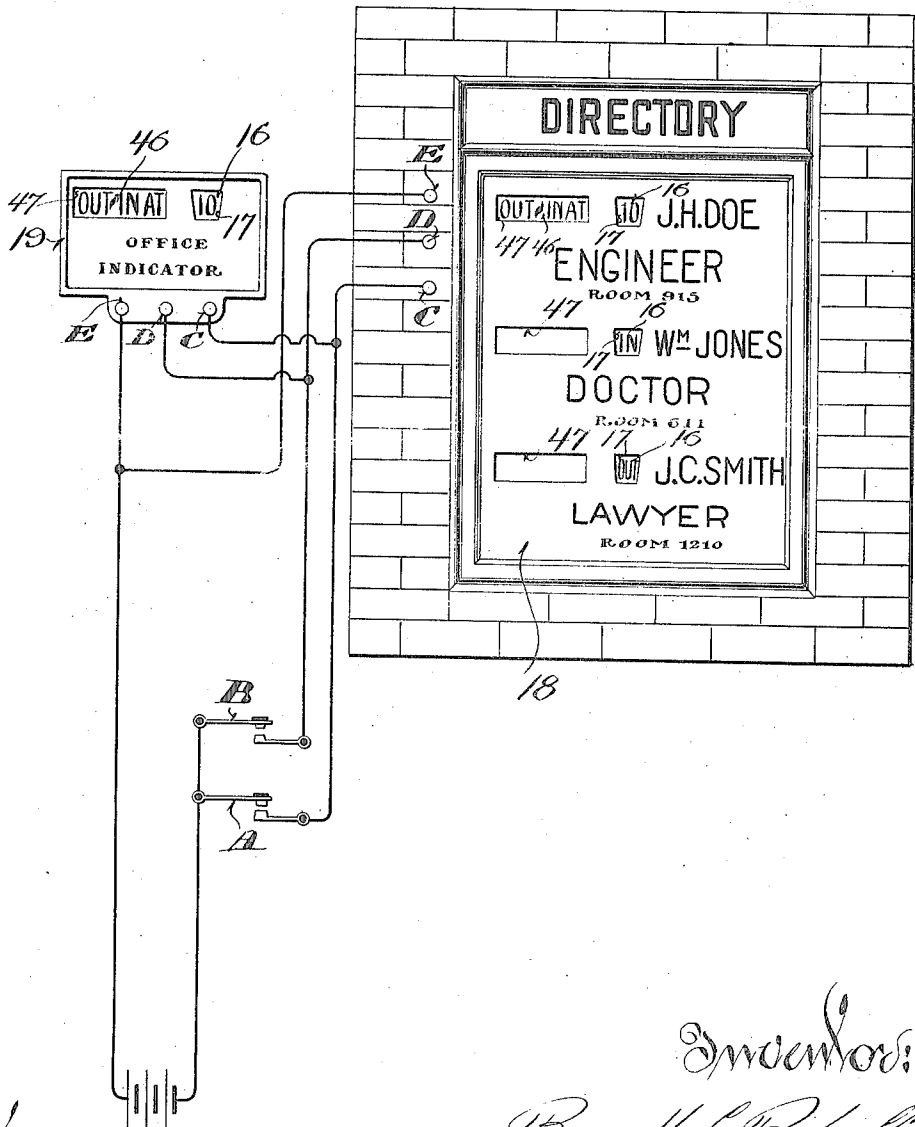
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 3 SHEETS—SHEET 3.

Fig. 9.



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UNITED STATES PATENT OFFICE.

BORNETT L. BOBROFF, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO UNIVERSAL INDICATOR COMPANY, OF MILWAUKEE, WISCONSIN.

TELEGRAPHY.

1,157,839.

Specification of Letters Patent.

Patented Oct. 26, 1915.

Application filed July 6, 1914. Serial No. 849,266.

To all whom it may concern:

Be it known that I, BORNETT L. BOBROFF, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Telegraphy; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention consists in what is herein particularly set forth with reference to the accompanying drawings and pointed out in the claims of this specification, its object being to improve the dial telegraph apparatus set forth in my application for Letters Patent filed February 9, 1914, Serial No. 817541.

Figure 1 of the drawings represents a partly sectional elevation of dial telegraph apparatus in accordance with my invention, the section being indicated by line 1—1 in the next described illustration; Fig. 2, a plan view of the apparatus partly in horizontal section; Fig. 3, a partly sectional elevation of a detail of the apparatus indicated by line 3—3 in Fig. 2; Fig. 4, a similar view indicated by line 4—4 in Fig. 2; Fig. 5, a cross-section view of a fragment of the apparatus, this view being indicated by line 5—5 in Fig. 2; Fig. 6, a side elevation of the dial of the apparatus; Fig. 7, a similar view of an indicator plate of the apparatus; Fig. 8, a diagram illustrating electric-wiring of the apparatus, and Fig. 9, another diagram illustrating an adaptation of the apparatus to office and directory board service.

Referring by numerals and letters to the drawings, 9' indicates a support of wood or other suitable material upon which the base 10 of the herein described apparatus is mounted, said base being provided with standards 11, 12, 13 and 14.

Journaled in the standards 11 and 12 is a spindle 15, and rigid on an angular end of the spindle, is an indented hub of a dial 16, which dial is observable through an opening 17 in a directory board or the front of a casing behind which the remainder of the apparatus is concealed.

A directory board 18 and a casing 19 are shown in Fig. 9. Words and numerals are displayed at intervals in a circle upon the face of the dial, the words being "In" and

"Out" and the numerals 1 to 12 inclusive, as shown in Fig. 6.

Fast on the spindle 15 is a ratchet-wheel 20 engaged by a detent-end 21' of a spring-controlled armature 21 of an electro-magnet, the coils 22 of which magnet are energized to effect a disengagement of the detent from the ratchet-wheel.

Fastened to the base 10 and the spindle 15 is a flat helix spring 23, and a flanged sleeve 24 is also fast on said spindle.

Loose on the sleeve is a rack-wheel 25 provided at regular intervals of a circle with notches or apertures corresponding in number to the indices of the aforesaid dial, and slipped on an angular reduced end of said sleeve is a disk 26 having diametrically opposite spring-tongues 26' engageable with the apertures in the rack-wheel, whereby the disk becomes a clutch with which said rack-wheel has slip engagement.

Arranged on the sleeve 24, between its flange and the hub of the rack-wheel, is a spiral-spring 27, and the coils 28 of an electro-magnet in connection with the standard 12 are energized to separate said rack-wheel from the clutch-disk 26.

A pin 29 projects from the spindle 15, and an angular arm 11' of the standard 11 constitutes a stop in the path of the pin to prevent overrunning of the aforesaid dial.

Engaging the teeth of the rack-wheel is a segmental rack-end of a lever 30 in connection with an armature 31 opposing the coils 32 of an electro-magnet, the lever being trunnioned in connection with screws 33 that turn in the standards 13, and have binding-nuts 34 thereon. The other end of the lever is provided with a seat for a spiral-spring 35 opposed by a screw 36 that turns in an arm 14' of the standard 14, a binding-nut 37 being provided on the screw.

Stop-screws 38 and 39 oppose the lever 30 in opposite directions, one of these screws being adjustable in the standard arm 14' and the other in the base 10 aforesaid.

A binding-nut 40 is provided on the screw 38, and a similar nut 41 is provided on the screw 39. By means of the screws 38 and 39, the throw of the lever 30 is regulated in opposite directions, its movement in one direction resulting from an energization of the magnet having the coils 32, and in the op-

posite direction as a result of expansive force of the spring 35 when said magnet is deenergized.

In practice, it is intended that the word "In" on the dials 16 shall be normally in view through the aperture 17 in the directory board and the front of the casing aforesaid.

As thus far described the general construction and arrangement of parts of a dial telegraph apparatus in accordance with my invention is for the most part similar to what is shown and described in the application for Letters Patent above noted. The improved apparatus has the base thereof provided with an additional standard 42 vertically bored to provide seats for spiral springs 43 and guides for plungers 44 supported on the springs. The standard 42 is also provided with a vertically bored rear protuberance 42' that serves as a guide for a stem 45 fastened at its upper end in a rear upper horizontal flange 46' of an angular indicator-plate 46 having the inscription "Out—In at" thereon to be exposed through an aperture 47 in the directory-board 18 or the front of the casing 19 aforesaid, this aperture being preferably alined in each instance with the aperture 17 of said board or casing. The flange of the plate 46 opposes the upper ends of the plungers 44, and the lower end of the stem 45 is fashioned to have angular engagement with a vertical longitudinal slot 48' in a lever 48 fulcrumed at one end on a pivot-screw 49 engaging the standard 42. Engaging the angular end of the stem, longitudinal side slots 50 of the lever and a vertical guide slot 42'' in the standard 42 is a pin 51 by which said stem and lever are connected.

Fast on the angular end of the spindle 15, back of the hub of the dial 16, is a cam 52 that normally opposes the lever 51 to hold the same depressed against the power of the springs 43 then compressed by the plungers 44 in the standard 42, whereby the indicator-plate 46 is retracted away from the aperture of said directory board or casing-front through which it is observable when said lever has the extent of upward throw shown in Fig. 4.

Apparatuses similar to that above specified are to be associated in pairs, one apparatus of each pair being arranged to have its dial and indicator-plate back of observation apertures in a directory-board in a public entrance hall or lobby of a building, and the other apparatus of the pair is to be arranged to have its dial and indicator-plate back of observation apertures in the front of a casing conveniently arranged in an apartment of the same building. The paired apparatuses have their magnets 32 in an electric-circuit, and the magnets 22 and 28 of said apparatuses are in another electric-

circuit. The first of said circuits is shown controlled by a push-button A, and the other circuit is shown controlled by a push-button B, the push-buttons being conveniently positioned in the apartment aforesaid.

A closing of the circuit controlled by the push-button A will cause an energization of the magnets 32 in said circuit to actuate the rack-levers 30 of the paired apparatuses and thus move the dial 16 of each of said apparatuses one step, through the medium of said levers meshed with rack-wheels 25 in clutch-connection with spindles 15. The circuit through the magnets 32 being broken, the levers 30 are automatically returned to normal position by reaction of springs 35, there being slip of the rack-wheels upon clutch-disks 26, but each dial remains in its adjusted position, because of the engagement of a detent 21' with the ratchet-wheel 20 on the spindle to which said dial is fastened. By successive operations of the push-button A, a step-by-step rotation imparted to the dials of the paired apparatuses until the desired index on each is brought to the reading point, the operator in the apartment aforesaid determining the reading of the dial at the directory-board by the reading of the other dial in the apartment where said push-button is located. To effect an automatic return of the dials to normal position the push-button B is actuated to close the electric-circuit in which the magnets 22 and 28 are located, the result being a disengagement of the detent 21' from the ratchet-wheel 20 of each of the paired apparatuses, and a retraction of the rack-wheel 25 of each apparatus from the adjacent clutch-disk 26, whereupon there is a reaction of a previously wound spring 23 to impart the desired reverse movement to said dials. The electric-circuits above noted can be readily traced in Fig. 8, and the connections C, D, and E of the wiring are also shown in Figs. 2, 8 and 9.

The dials of paired apparatuses will normally show "In" and being moved one step they will show "Out". Hence at the directory board the mere presence or absence of an occupant of an apartment designated on said board may be indicated as is shown in Fig. 9. However if the occupant on leaving the apartment desires to indicate his presence there again at a certain hour, he effects a rotary adjustment of the dials aforesaid until the designation for said hour is visible at the directory board and casing, and coincident with said adjustment there is a movement of the cam 52 of each of the paired apparatuses to permit an automatic elevation of the indicator-plate 46 of each into register with an adjacent view aperture, the legend to the reader at the directory-board or casing being "Out—In at" (the hour aforesaid say) "10" as is shown in Fig. 9, it being understood that the organ-

ization of each apparatus is such that the indicator plate thereof does not come into view until the dial of said apparatus has been rotated enough to carry its index "In" at least two steps from normal position, and thereafter the legend "Out—In at" will read in line with some arbitrarily selected numeral on said dial at the view point.

It is within the scope of my invention, as herein claimed, to employ apparatuses similar to what is herein described at the directory board only, the push-buttons for control of the electric-circuits pertaining to each apparatus being located in a more or less distant apartment, and the one A operated, according to a code, to effect a show of information at said directory board.

I claim:

1. A directory-board provided with openings adjacent to a designation thereon, a telegraph apparatus comprising a dial having the words "In" and "Out" and the numerals 1 to 12 inclusive displayed thereon at regular intervals of a circle, the several indices being observable one at a time through one of the openings of said board, electro-mechanical means under control at a distant point for imparting step-by-step rotary movement to the dial, means by which the dial is held to indefinitely expose an arbitrarily selected index thereon, electro-mechanical means for release and return of the dial to normal position, an adjustable plate having the inscription "Out—In at" thereon, and means by which said plate is automatically adjusted in and out of register with another of the openings in the aforesaid board at predetermined times coincident with adjustments of the dial.

2. A directory-board provided with openings adjacent to a designation thereon, a casing distant from the board and having openings in its front, a pair of telegraph apparatuses, one back of the board and the other in the casing, and each comprising a dial having the words "In" and "Out" and the numerals 1 to 12 inclusive displayed thereon at regular intervals of a circle, the several indices of the dial being observable one at a time through an adjacent opening of said board or casing, electro-mechanical means for imparting step by step rotary movement to the dial, these means in both apparatuses being in a circuit under control in proximity to said casing, means by which the dial of each apparatus is held to indefinitely expose an arbitrarily selected index thereof, electro-mechanical means for release and return of the dials to normal position, these means in both apparatuses being in another circuit also under control in proximity to the aforesaid casing, adjustable plates each having the inscription "Out—In at" thereon; and means by which said plates are automati-

cally adjusted in and out of register with adjacent openings of the aforesaid board and casing at predetermined times coincident with adjustments of the dials.

3. A telegraph apparatus comprising a spindle and its bearings, a ratchet-wheel fast on the spindle, an electro-magnet provided with an armature having a detent-end engageable with the ratchet-wheel, a spring-controlled sliding rack-wheel in clutch-connection with the spindle, an electro-magnet by which to draw the rack-wheel out of clutch against spring resistance, a rack-lever engaging said rack-wheel, an electro-magnet having the armature thereof in connection with the lever, a dial fast on said spindle and provided with indices at regular intervals of a circle thereon, means under control at a distant point for energizing the last named magnet separately and for simultaneously energizing the other two of the magnets, means for effecting an automatic reverse movement of the spindle out of clutch with said rack-wheel, a spring-controlled movable indicator plate, a lever in connection with the plate for adjusting the same against spring-resistance, and a lever-actuating cam in connection with the aforesaid spindle.

4. A telegraph apparatus comprising a spindle and its bearings, a ratchet-wheel fast on the spindle, an electro-magnet provided with an armature having a detent-end engageable with the ratchet-wheel, a spring-controlled sliding rack-wheel in clutch-connection with the spindle, an electro-magnet by which to draw the rack-wheel out of clutch against spring resistance, a rack-lever engaging said rack-wheel, an electro-magnet having the armature thereof in connection with the lever, a dial fast on said spindle and provided with indices at regular intervals of a circle thereon, a pin extending from the spindle, a stop in the path of the pin to thereby prevent overrunning of the dial, means under control at a distant point for energizing the last named magnet separately and for simultaneously energizing the other two of the magnets, and means for effecting an automatic reverse movement of the spindle out of clutch with said rack-wheel.

5. A pair of telegraph apparatuses each comprising a spindle and its bearings, a ratchet-wheel fast on the spindle, an electro-magnet provided with an armature having a detent-end engageable with the ratchet-wheel, a spring-controlled sliding rack-wheel in clutch connection with the spindle, an electro-magnet by which to draw the rack-wheel out of clutch against spring resistance, said electro-magnets of both apparatuses being in the same circuit; a rack-lever engaging said rack-wheel, an electro-magnet having the armature thereof in con-

nection with the lever, the lever actuating magnets of both apparatuses being in the same circuit distinct from the one aforesaid; a dial fast on said spindle and provided with indices at regular intervals of a circle thereon, means for effecting an automatic reverse movement of the spindle out of clutch with said rack-wheel, a spring-controlled movable indicator-plate, a lever in connection with the plate for adjusting the same against spring-resistance, and a lever-actuating cam in connection with the aforesaid spindle.

6. A telegraph apparatus comprising a spindle and its bearings, electrically controlled mechanism for actuating the spindle in opposite directions, a standard provided with vertical bores, spiral-springs seated in

the bores, plungers supported on the springs, an indicator-plate having an upper horizontal flange opposing the plungers, a stem connected to said flange and guided in a protuberance of said standard, a lever having suitable play connection with the lower end of the stem, and means with the spindle for depressing the lever against resistance of the plunger-opposing springs.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee in the county of Milwaukee and State of Wisconsin in the presence of two witnesses.

BORNETT L. BOBROFF.

Witnesses:

H. E. OLIPHANT,

M. E. DOWNEY.