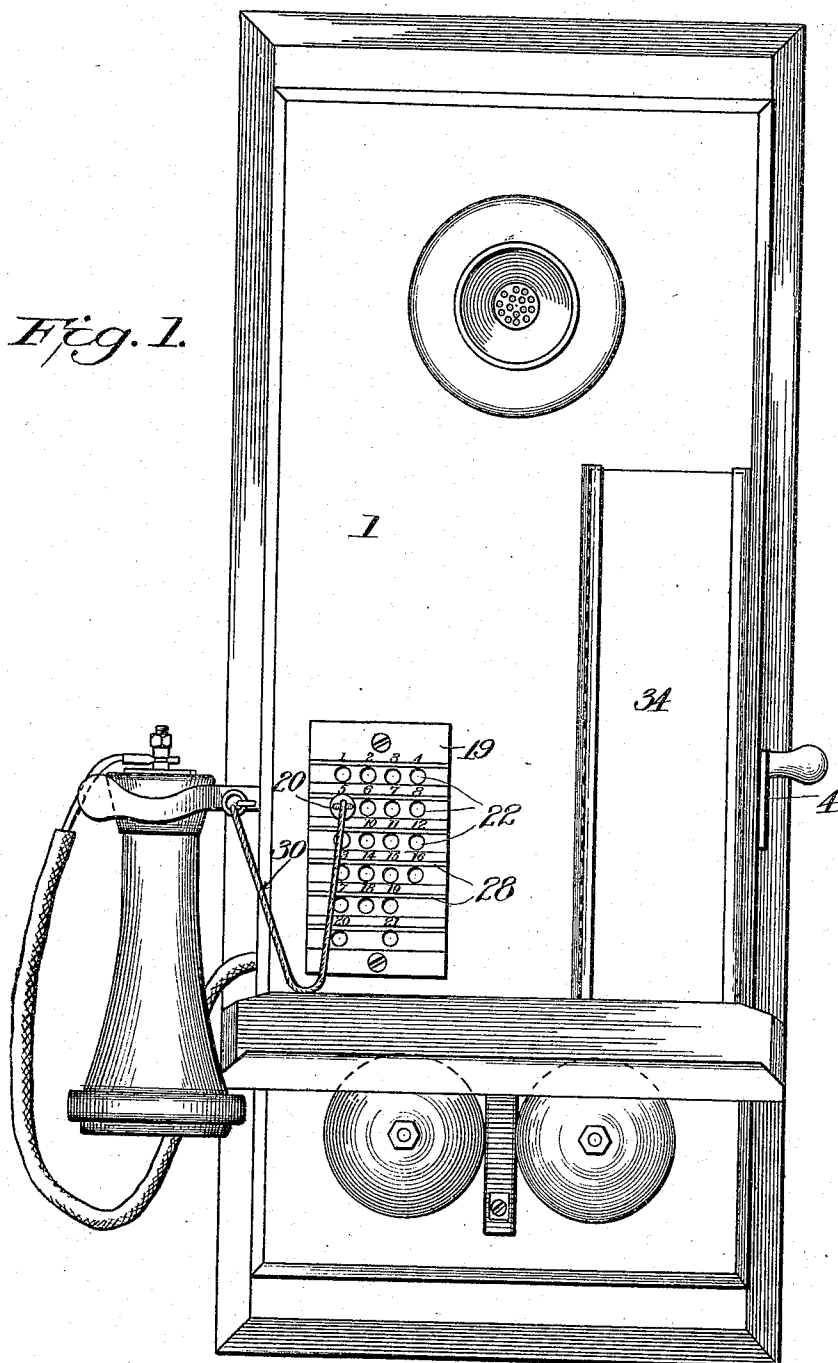


F. A. MEISSNER.
MECHANICAL CODE SIGNALING DEVICE.
APPLICATION FILED DEC. 11, 1908.

942,334.

Patented Dec. 7, 1909.
3 SHEETS—SHEET 1.

Fig. 1.



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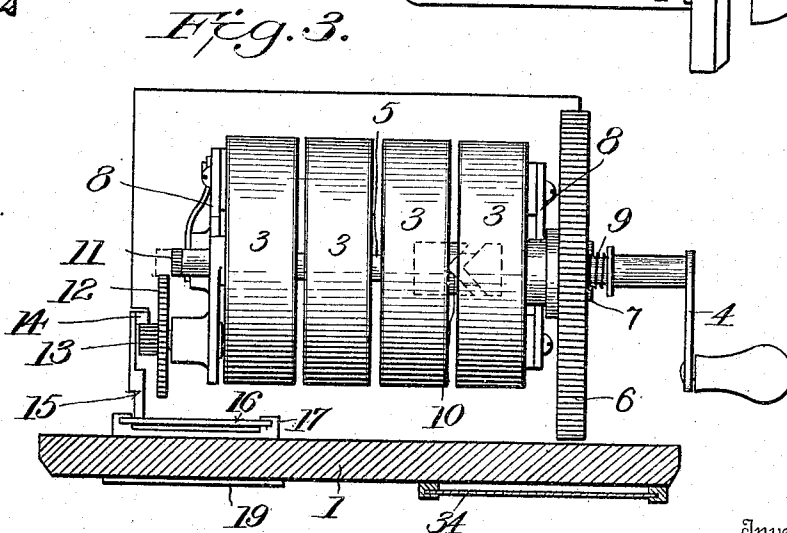
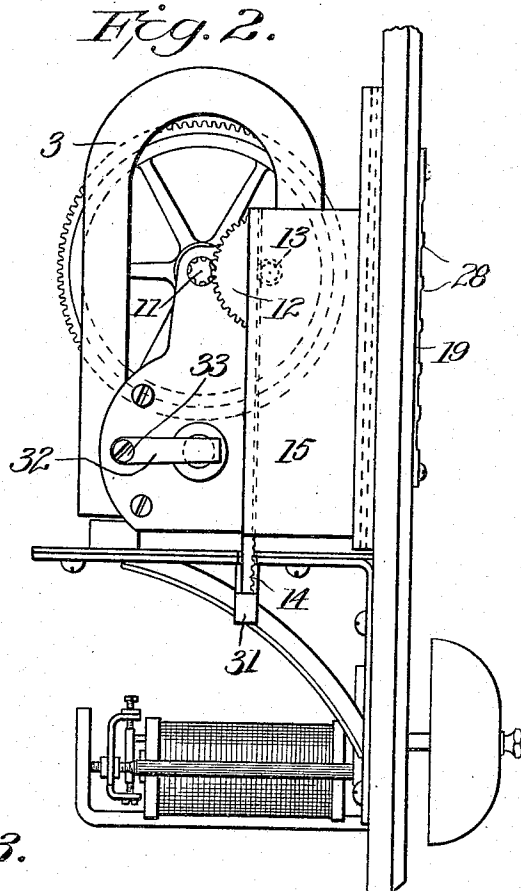
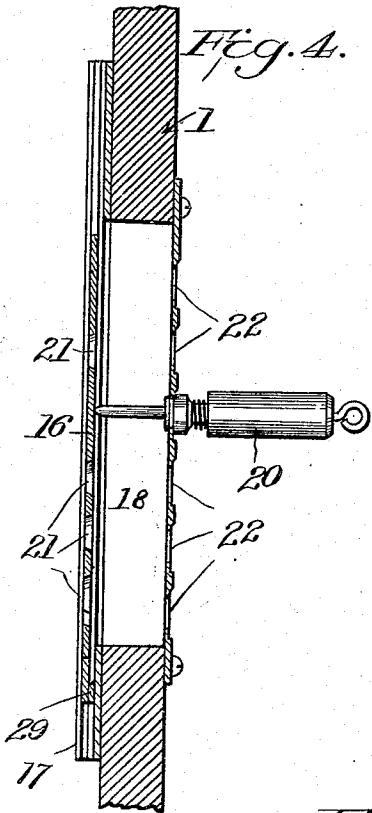
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 5.

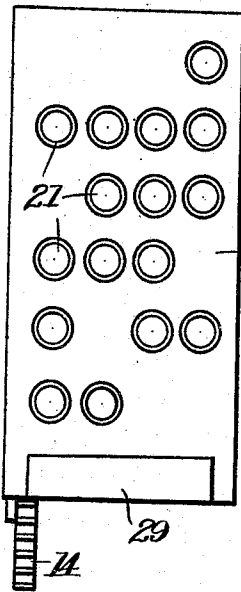


Fig. 6.

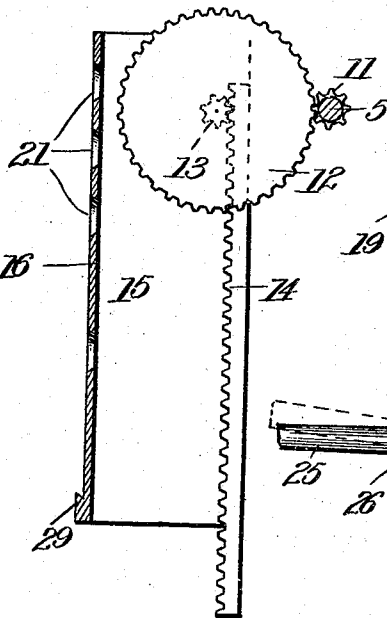


Fig. 7.

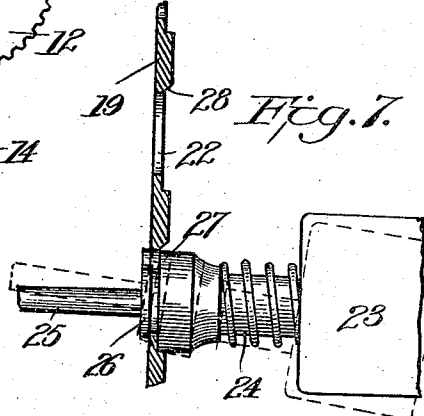


Fig. 8.

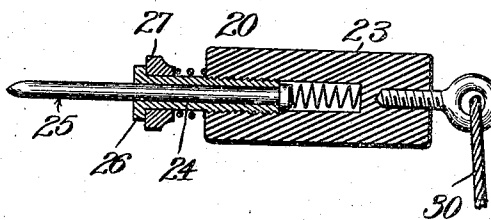
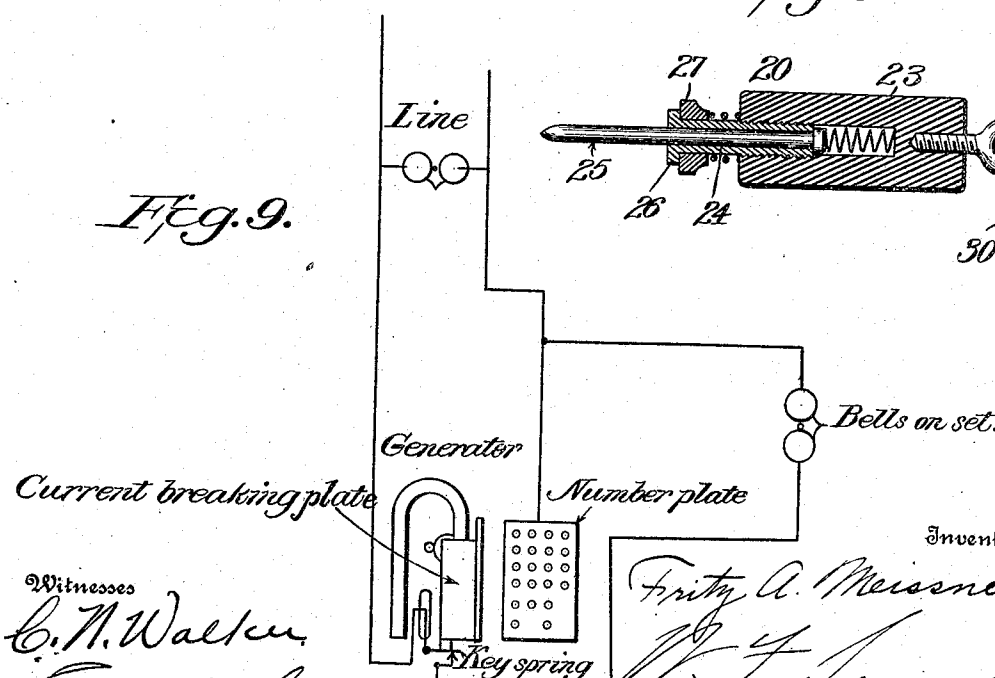


Fig. 9.



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UNITED STATES PATENT OFFICE.

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MECHANICAL CODE-SIGNALING DEVICE.

942,334.

Specification of Letters Patent.

Patented Dec. 7, 1909.

Application filed December 11, 1908. Serial No. 467,036.

To all whom it may concern:

Be it known that I, FRITZ A. MEISSNER, a citizen of the United States, residing at Manchester, in the county of Chesterfield and State of Virginia, have invented certain new and useful Improvements in Mechanical Code-Signaling Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to mechanical code signaling devices especially adapted for party-line telephones but which may also be advantageously employed in telegraphy and other apparatus using electricity as a means of operating the signals.

The device is particularly designed for ringing code signals on rural telephone lines where generally a plurality of telephonic instruments are connected to a single circuit for handling communications between the several instruments whereby the cost of operation and maintenance of the system is greatly reduced over a system employing an independent circuit for each instrument. In such rural systems unless some mechanical device is employed which insures the proper ringing of any desired code signal, the subscriber will often make mistakes and by an error in some part of the code, for instance by giving a short ring in place of a long ring or vice versa, the wrong party will be called thereby leading to much confusion.

The object of the present invention is to provide a simple, inexpensive and thoroughly practical and efficient mechanical device for ringing code signals whereby it is impossible to make a mistake and all confusion is avoided.

I employ the usual field magnet and revolvable armature excited by the magnet and operated by a crank projecting through the telephone box. The shaft which operates said armature is also adapted to actuate a train of gears connecting with a sliding plate having a plurality of circuit breakers therein. A frame is arranged over an opening in the telephone-box opposite said sliding plate and is provided with a series of openings through which a plug or circuit closer may be introduced to contact with said plate at various points with relation to the circuit breakers therein whereby the

movement of said plate through one stroke may result in the ringing of various code signals, that is, various combinations of long and short rings.

The invention also consists in constructing the plug or circuit closer to be retained or locked in place in the opening in the frame into which it is inserted throughout the stroke of the sliding plate and in providing means for releasing said plug and discharging it from said frame at the end of the stroke of the plate.

The invention consists further in the features of construction and combinations of devices hereinafter described and specified in the claims concluding this specification.

In the accompanying drawings, illustrating the preferred embodiment of my invention: Figure 1 is a front elevation of a telephone equipped with my code signaling device. Fig. 2 is a side elevation of part of the apparatus as it would appear if the side wall of the telephone-box were removed. Fig. 3 is a horizontal section taken above the field magnet. Fig. 4 is an enlarged vertical section through the sliding plate and the perforated frame for holding the plug or circuit closer. Figs. 5 and 6 are detailed front and vertical sectional views, respectively, of the sliding plate. Fig. 7 is an enlarged detailed view showing how the plug is retained or locked in place on the perforated frame. Fig. 8 is a longitudinal sectional view of the plug, and Fig. 9 is a diagrammatic illustration of the circuit connections of my code signaling apparatus.

Referring more particularly to the drawings, 1 designates the telephone-box which may be of any old and well known construction and is employed for housing the magnet and signaling mechanism. The armature (not shown) which is mounted in the usual manner within the field magnet 3, is operated by the crank 4 on the end of a shaft 5 also carrying a gear wheel 6 meshing with a pinion 7 on the armature shaft. Said shaft 5 is journaled in brackets 8 secured at opposite ends of the field magnet and, when operated, is moved longitudinally against the action of the spring 9 by reason of the beveled collars 10 so as to bring a pinion 11 on its end into mesh with a gear 12 journaled on one of the brackets 8. Another pinion 13 is mounted on the shaft of the gear 12 and is adapted to rotate therewith. Said pinion 13 meshes with a rack 14 on the lateral flange

15 of the sliding plate 16. Said sliding plate is mounted to move vertically in grooved guides or ways 17 secured to the inner surface of the telephone-box at opposite sides of an opening 18 (Fig. 4) in said box. A frame 19 is fastened to the outer surface of the telephone-box over this opening and is provided with a plurality of perforations through which the plug or circuit closer 20 is adapted to be passed to contact with the sliding plate 16. This plate is formed with vertical rows of openings 21 arranged at various predetermined distances apart. The perforations 22 in the frame 19 are also arranged in vertical rows but at equal distances apart. Each vertical row of perforations in said frame is arranged opposite one of the vertical rows of openings in the sliding plate. It will, therefore, be seen that if the plug is inserted in one of the top perforations in the frame, it will contact with the sliding plate throughout its upward stroke and that the circuit being closed between said frame and plate by said plug, a code signal or combination of long and short rings will be given according to the number of openings or circuit breakers in that particular vertical row in the plate and the distances between said openings. It will be seen further that if the plug is inserted in a lower perforation in one of the vertical rows in the frame, as illustrated in Fig. 4, said plug will contact with only a part of the plate during its upward stroke so that a less number of rings will be sounded.

I have illustrated the openings comprising the vertical rows in the sliding plate as being arranged at two different intervals apart, the long interval being twice the length of the short interval. Said short interval is equal to the constant interval between the perforations in the frame 19. The result is that when the plug is inserted in certain of the perforations in said frame, it will reach into one of the openings in the sliding plate whereas when inserted in others of said perforations it will come in contact with the middle of one of the long spaces or intervals between the openings in said plate. In the latter case the code rung will begin with a short ring, whereas in the next higher perforation in the frame the code would begin with a long ring. I have shown a construction which provides for twenty-one different code signals but it is evident that by increasing the sizes of the sliding plate and the frame, the number of code signals may be indefinitely increased.

The plug or circuit closer 20 comprises a handle 23, a projecting sleeve 24 and a spring-pressed pin 25 extending through said sleeve for contacting with the sliding plate. The sleeve 24 terminates in a flange 26 and around said sleeve is mounted a spring-pressed collar 27 normally engaging said flange. The frame 19 is formed with a

beveled surface 28 at the top of each of the perforations therein. It will also be noted that the flange 26 is of a size to fit the openings 22 in said frame but that the spring-pressed collar 27 projects beyond this flange. The result is that when the plug is inserted into one of the perforations in the frame the flange 26 will pass through it while the spring-pressed collar 27 will come in contact with the beveled surface 28 and ride down the same causing the collar to be depressed and the plug to be moved downward slightly until the lower edge of the perforation is clamped between said flange and collar as illustrated in Fig. 7. The sliding plate 16 has a projecting ledge 29 at its lower edge which comes in contact with the inner end of the pin 25 of the plug at the termination of the upward stroke of said plate. When said ledge engages said pin it operates to rock the plug as shown in dotted lines in Fig. 7, whereby it is released from engagement with the lower edge of the perforation in the frame. As soon as it is thus released, the spring pressure against the collar 27 causes said plug to be forcibly discharged from the perforation in said frame. In practice, I attach the plug to a cord 30 secured to the telephone-box so that it will not become lost when thus discharged.

When, in operation, the sliding plate reaches the limit of its upward stroke and the ledge 29 thereon disengages and discharges the plug thereby notifying the operator that the ringing of the code signal has been completed, he lets go of the crank 4 whereupon the shaft 5 moves longitudinally under the influence of the spring 9 and disengages the pinion 11 from the gear 12, permitting the sliding plate to fall by gravity. The plate is cushioned at the bottom of its fall by a spring 31 which supports it in proper position to be again operated the next time it is desired to use the telephone. If gravity should not be sufficient to cause the plate to fall, a spring (not shown) or other suitable means may be employed to insure the proper return of the plate to its lowered position. The electricity generated by the armature is taken off by a spring contact 32 which rests against the armature shaft and to which connections (not shown) are made with the binding post 33, Fig. 2, the circuit being illustrated in Fig. 9. A card 34 may be arranged on the front of the telephone-box for containing a directory of subscribers to correspond with the numbers indicating the perforations in the frame. It should be understood that while I have shown and described openings in the sliding plate to act as circuit breakers, insulating material embedded in the plate or other known devices may be used instead if desired.

I do not confine myself to the exact con-

structions shown and described herein but reserve the right to make such changes as fairly fall within the scope of my invention.

I claim:

5 1. In a mechanical code signaling device, the combination, with a plate having a plurality of parallel rows of circuit breakers therein, of a circuit closer, a frame having means for introducing said circuit closer
10 into contact with various points on said plate, and for holding it in position so that it closes the circuit between said frame and plate, means to slide said plate in line with the circuit breakers therein whereby one or
15 more of them are moved over said circuit closer, and means to automatically disengage said circuit closer at the end of the stroke of said plate.

2. In a mechanical code-signaling device,
20 the combination, with a plate having a row of circuit breakers therein, of a frame having a row of perforations therein arranged in alinement with the row of circuit breakers in said plate, a circuit closer adapted to
25 be inserted through any one of the perforations in said frame to contact with various points in said plate, and means to slide said plate in line with the circuit breakers therein whereby one or more of them are moved
30 over said circuit closer.

3. In a mechanical code-signaling device, the combination, with a flat plate having a plurality of rows of circuit breakers therein, of a frame having a plurality of rows of perforations therein arranged respectively in
35 alinement with the rows of circuit breakers in said plate, a circuit closer adapted to be inserted through any one of the perforations in said frame so as to contact with various
40 points on said plate, and means to slide said plate in line with the rows of circuit breakers whereby one or more of them are moved over said circuit closer.

4. In a mechanical code-signaling device,
45 the combination, with a plate having a plurality of circuit breakers therein, of a circuit closer, a frame having means for introducing said circuit closer into contact with various points on said plate, means to retain
50 said circuit closer in the desired position, means to slide said plate in line with the circuit breakers therein whereby one or more of them are moved over said circuit closer, and means for automatically releasing said
55 circuit closer at the end of the stroke of said plate.

5. In a mechanical code-signaling device, the combination, with a vertically movable plate having circuit breakers therein, of a
60 circuit closer adapted to be held in contact with said plate, means to raise said plate which becomes automatically disengaged when released, means to return said plate to normal position when released, and means to
65 cushion the fall of said plate.

6. In a mechanical code-signaling device, the combination, with a vertically movable plate having circuit breakers therein, of a circuit closer adapted to be held in contact with said plate, means to raise said plate
70 which becomes automatically disengaged when released and permits said plate to fall by gravity, and means to cushion the fall of said plate.

7. In a mechanical code-signaling device,
75 the combination, with a plate having circuit breakers therein, of a frame having a perforation therein, a circuit closer provided with a pin adapted to extend through said perforation and contact with said plate, said circuit closer also having a flange and a spring-pressed collar adapted to clamp the edge of the perforation between them, and means to
80 slide said plate whereby its circuit breakers are moved over said pin.

8. In a mechanical code-signaling device, the combination, with a plate having circuit breakers therein, of a frame having a perforation therein, a circuit closer provided with a spring-pressed pin adapted to extend
90 through said perforation and contact with said plate, means to clamp said circuit closer in the perforation in said frame, means to slide said plate whereby its circuit breakers are moved over said pin, and means to dis-
95 engage said circuit breakers from the perforation in said frame when the plate reaches the end of its stroke whereupon the spring-pressed pin will throw the circuit breaker out of engagement with said frame and
100 plate.

9. In a mechanical code-signaling device, the combination, with a plate having circuit breakers therein, of a frame having a perforation therein, a circuit closer provided
105 with a pin adapted to extend through said perforation and contact with said plate, said circuit closer also having a flange and a spring-pressed collar adapted to clamp the edge of the perforation between them, means
110 to slide said plate whereby its circuit breakers are moved over said pin, and means to disengage said flange and collar from the edge of said perforation when the plate reaches the end of its stroke.
115

10. In a mechanical code-signaling device, the combination, with a plate having circuit breakers therein, of a frame having a perforation therein, a circuit closer provided
120 with a spring-pressed pin adapted to extend through said perforation and contact with said plate, said circuit closer also having a flange and a spring-pressed collar adapted to clamp the edge of the perforation between them, means to slide said plate
125 whereby its circuit breakers are moved over said pin, and a ledge on the end of said plate adapted to strike said pin and disengage said flange and collar from the edge of said perforation when said plate reaches
130

the end of its stroke whereupon the spring-pressed pin will throw the circuit breaker out of engagement with said frame and plate.

5 11. In a mechanical code-signaling device, the combination, with a plate having circuit breakers therein, of a frame having a perforation therein, a circuit closer provided with a pin adapted to extend through said
10 perforation and contact with said plate, said circuit closer also having a flange and a spring-pressed collar adapted to clamp the edge of the perforation between them, means to slide said plate whereby its circuit break-
15 ers are moved over said pin, and a ledge on the end of said plate adapted to strike said pin and disengage said flange and collar from the edge of said perforation.

20 12. In a mechanical code-signaling device, the combination, with a plate having circuit breakers therein, of a frame having a perforation therein, a circuit closer provided with a spring-pressed pin adapted to extend through said perforation and contact with
25 said plate, said circuit closer also having a flange and a spring-pressed collar adapted to clamp the edge of the perforation be-

tween them, and means to slide said plate whereby its circuit breakers are moved over said pin. 30

13. In a mechanical code-signaling device, the combination, with a plate having circuit breakers therein, of a frame having a perforation therein and a beveled surface at the upper edge thereof, a circuit closer pro- 35
vided with a pin adapted to extend through said perforation and contact with said plate, said circuit closer also having a flange adapted to fit into said perforation and a spring pressed collar projecting beyond said flange whereby said collar will ride down
40 said beveled surface when the circuit closer is inserted in said perforation and cause the lower edge of the latter to be clamped between said flange and collar, and means 45
to slide said plate whereby its circuit breakers are moved over said pin.

In testimony whereof, I affix my signature, in presence of two witnesses.

F. A. MEISSNER.

Witnesses:

D. F. LA PRADE,
H. McGRANIGHAN.