

A. L. SOHM.
CODE SIGNAL DEVICE.
APPLICATION FILED AUG. 23, 1913.

1,144,870.

Patented June 29, 1915.
3 SHEETS—SHEET 1.

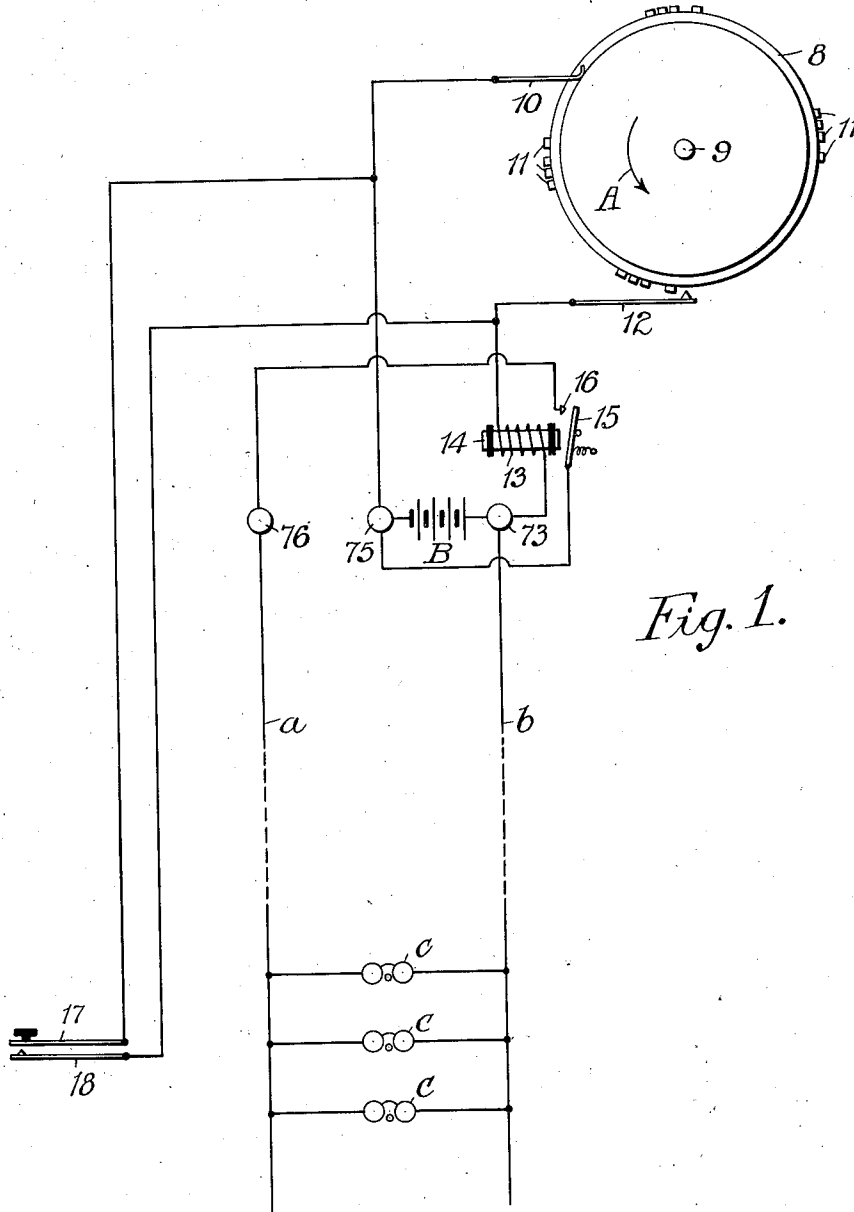


Fig. 1.

Witnesses:

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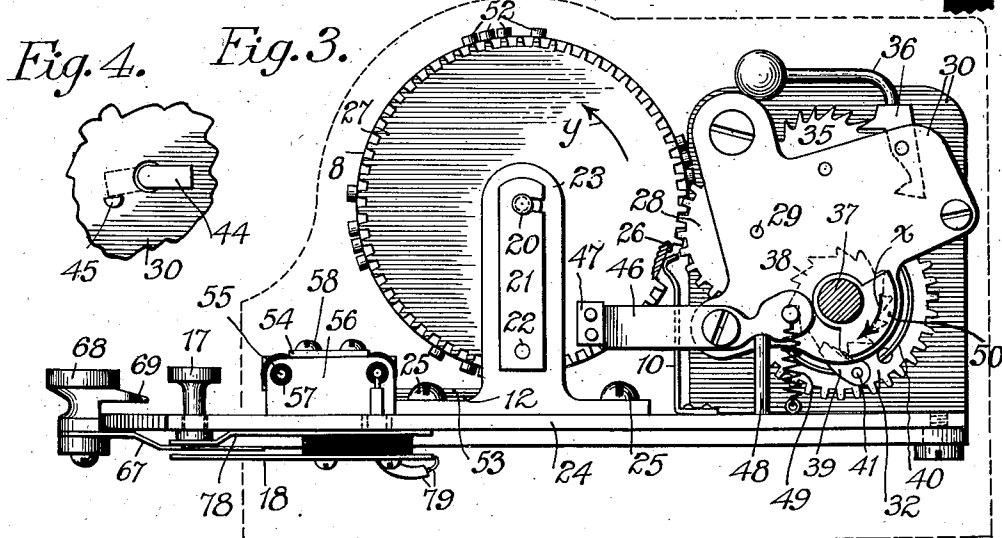
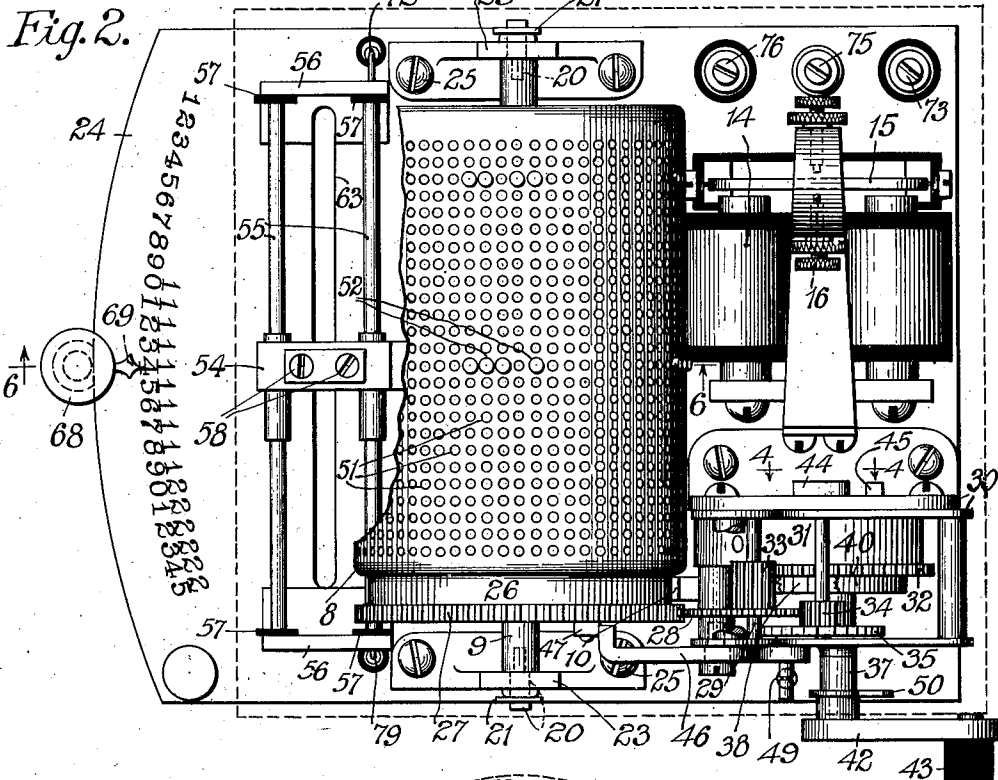
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 5.

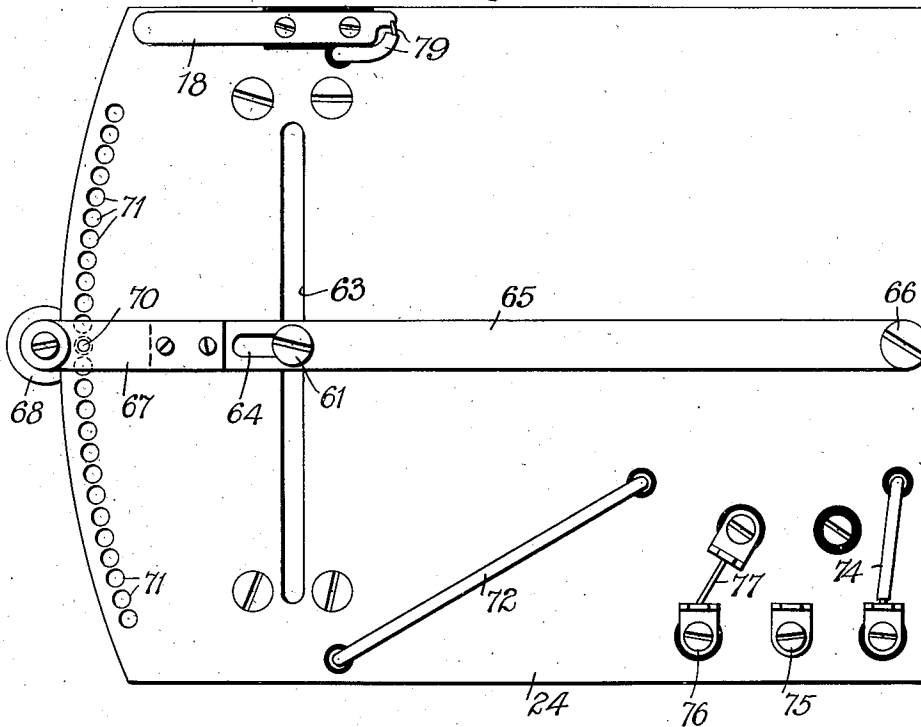


Fig. 6.

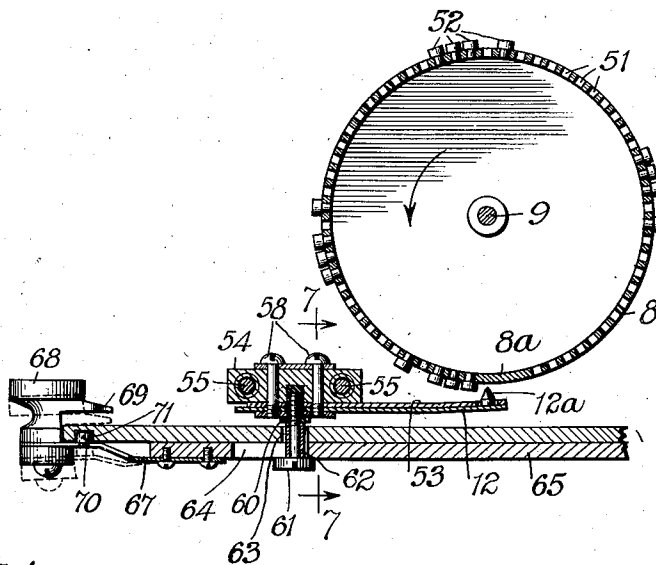
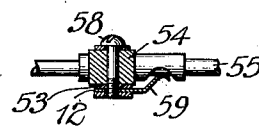


Fig. 7.



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UNITED STATES PATENT OFFICE.

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CODE-SIGNAL DEVICE.

1,144,870.

Specification of Letters Patent.

Patented June 29, 1915.

Application filed August 23, 1913. Serial No. 786,233.

To all whom it may concern:

Be it known that I, ALFRED L. SOHM, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Code-Signal Devices, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to signaling apparatus and contemplates the improved code signaling mechanism for automatically giving a selected code signal in factories, shops, yards, and similar places where it is desired to attract the attention of different persons either to respond to the telephone, or to call at some prescribed central location.

It is the primary object of my invention to provide a device wherein different codes may be readily selected and wherein the manual acts are limited to the selection and the setting of the device into operation.

My invention provides effective means whereby the codes may be changed or rearranged and whereby new codes may be added.

Further features of my invention are found in the means for operating the signals, so that the code may be repeated a number of times for each setting, and in the various details of construction to which I shall refer when I take up the drawings for description.

My device is electrically operated and the code mechanism, therefore, consists in electrical contact mechanism which controls the circuit of any kind of audible or visual signals, the signaling devices being arranged in the circuit in such a manner that the signal may be given at various points simultaneously.

I shall now refer to the accompanying drawings, in which—

Figure 1 is a diagrammatic representation of an embodiment of my invention, this figure showing the circuit arrangement employed; Fig. 2 is a plan view of a specific form of the device of my invention; Fig. 3 is a side elevational view thereof; Fig. 4 is a fragmentary view taken on the plane of the line 4—4 of Fig. 2, looking in the direction indicated by the arrows; Fig. 5 is a plan view of the under side of my device; Fig. 6

is a fragmentary sectional view taken on the plane of the line 6—6 of Fig. 2 and looking in the direction indicated by the arrows; and Fig. 7 is a detailed view, in section, taken on the plane of the line 7—7 of Fig. 6 and looking in the direction indicated by the arrows.

Referring first to Fig. 1, I have illustrated a drum 8, to which I shall refer in detail later, mounted upon a shaft 9 to rotate in the direction of the arrow A. A wiper 10 makes constant contact with the drum and a number of contact points 11, 11 are arranged on the periphery of the drum in a common plane at right angles to the axis of the shaft. Each set of these contact points 11, 11 form a code signal, as will be described presently, and in the arrangement shown in Fig. 1 four of such sets are provided so that the code will be repeated three times. The particular code there shown is arranged to give a short ring followed by a long ring, assuming that the signals employed are bells, as will be pointed out presently. A contact spring 12 is mounted so that it may engage the contact points 11, 11, but will never engage the body of the drum, and it is at this point that the circuit is controlled. The contact spring 12 is connected with one terminal of the winding 13 of a relay 14, the other terminal of which winding is connected with one pole of the battery B. The other pole of the battery is connected with the wiper 10, as illustrated. The armature 15 of the relay 14, which armature is normally held in a retracted position, is permanently connected with one side of the battery and is adapted to make engagement, when attracted by the core of the relay, with a contact 16 which is connected to one line limb *a*. The other line limb *b* is connected with the other pole of the battery so that the relay contact controls the line circuit. A plurality of signals *C*, *C*, such as bells, are bridged across the line limbs *a* and *b* and it will now be seen that the relay controls the circuit through these bells and the battery and that the relay, in turn, is controlled by the drum contacts. The battery B may be made small so that, while it still may operate the relay, it will not cause any excessive or destructive sparking at the drum contacts and, if this battery is insufficient to

operate the signals or the number of signals on the line circuit, an additional battery may be interposed in the line circuit. It will now be seen that as the drum rotates, the circuit of the signals is periodically opened and closed, through the relay, and the proper codes are automatically given in this way. A manually operated normally open key 17 is adapted to engage a contact 18 to close a bridge in shunt of the drum contacts, if desired. In this way some special signal, manually operated, may be given.

Referring now to the remaining figures, it will be seen that the shaft 9, upon which the drum 8 is mounted, is, in turn, mounted upon a pair of trunnions 20, 20, which are removably held in place by means of clips 21, 21, pivoted at 22, 22, upon uprights 23 which are secured to the base-plate 24 of the device, by means of screws 25, 25. At one end, the drum 8 is provided with the reduced portion 26 with which the wiper 10, permanently grounded to the base-plate 24, makes constant electrical engagement. At this end, the drum is also provided with a comparatively large gear wheel 27 which meshes with a driving pinion 28 mounted upon a shaft 29 in the clockwork frame 30, 30. The clockwork frame supports the mechanism for driving the drum, through the medium of the gears referred to, and this mechanism comprises the main spring 31, the main gear wheel 32, and the pinion 33 which is mounted upon the shaft 29 already referred to. A pinion 34 meshes with the pinion 28 and carries with it an escapement wheel 35, with which an escapement 36 coöperates in a manner well known in the art. This escapement is illustrated in Fig. 3 but is omitted from Fig. 2 in order not to hide the structure below it. The winding shaft 37 carries a ratchet wheel 38, with which a pawl 39, held in engagement with the ratchet wheel by means of a spring 40, coöperates, this pawl being pivoted at 41 to the gear wheel 32 already referred to. The winding shaft 37 is provided with a crank 42 having a handle 43, and it will be seen that when the crank is turned in the direction of the arrow α (Fig. 3) the ratchet will be revolved to catch the pawl at an advanced point and the spring, which it will be understood is connected with the winding shaft, is wound to the proper degree, as well-known to those skilled in the art. At the inner end of the winding shaft 37, I provide a small arm 44 which is adapted to engage a lug 45 on the winding mechanism support 30 when the winding has reached the required degree.

It will be seen that the arrangement which has been described places the drum 8 under the tension of the spring 31 so that the drum tends to rotate in the direction of the arrow γ . However, rotation in this di-

rection is normally arrested by means of a rocking lever 46, the end of which engages a lug 47 secured to the side of the drum. This rocking lever 46 is normally held in its arresting position, against a stop 48, by means of a spring 49. The winding shaft 37 carries a cam 50, which, when the handle 43 is turned in the direction of the arrow α , engages the rocking lever and moves it about its pivot so that it will release the lug 47 and will permit the drum to rotate. The rotation of the drum is governed by the escapement mechanism and the cam 50 is so arranged and is of such size that it will release the rocking lever 46 before the lug 47 returns to its initial position, so that the rocking lever will be in its arresting position when the lug reaches it. Therefore, after the handle has been turned and released, the drum will make one complete revolution and at the end of this revolution will be arrested, the parts being then in their normal position.

The drum 8 is provided with a multiplicity of holes 51 which are arranged in a number of circumferential series, each series in a plane of its own at right angles to the axis of the shaft. A plurality of interchangeable pins 52, with enlarged heads, are arranged in various holes and the pins of each series are given code arrangements, as will be described presently, and are adapted to be engaged by the contact spring 12 heretofore referred to. As clearly illustrated in the drawings, the contact spring 12 carries the contact point 12^a and is mounted against a stout spring 53 upon a carriage 54 riding upon the rods 55, 55 extending transversely of the device and mounted in brackets 56, 56. The rods 55 are insulated from the metallic base-plate 24 and the general framework of the device by means of hard rubber bushings 57, 57 and they form part of a circuit which will be described presently. The contact point 12^a extends through an opening in the stout spring 53, which is provided so as to prevent the lighter spring 12 from making contact with the body of the drum, and the entire arrangement is clamped to the carriage by means of bolts 58, 58. In order that the spring 12 may have proper electrical contact with the rods 55, which as will be seen is essential, it is provided with a lateral extension 59, which is in the form of a wiper riding on the under side of one or both of the rods 55.

An insulating plug 60 is carried by the under side of the carriage 54 and a screw 61 threads into said plug and holds a friction sleeve 62 in place. The arrangement which I have just described extends downwardly from the carriage 54 and passes through an elongated transverse slot 63 and also a slot 64 longitudinally disposed in a lever 65 piv-

oted at 66 to the under side of the base-plate 24. This lever 65 extends toward the front of the machine, where it is provided with a leaf spring 67 which carries a finger piece 68, a pointer 69, and a plunger 70 which is adapted to enter any one of a series of pockets 71, 71 arranged in an arc in the under side of the base-plate. The plunger arrangement is a lock which is adapted to hold the lever 65 in any position into which it has been angularly adjusted by the manipulation of the finger piece 68. It will be seen that the top of the base-plate 24, at the front, is provided with a scale of numbers with which the pointer 69 cooperates. In the specific instance illustrated, these numbers run from one to 25 and each number represents one of the series of peripheral openings, or one of the series of code contacts disposed in said openings, on the drum 8. Thus, when the pointer points to "14", the indication is that the contact point 12^a on the spring 12 is in alinement or in register with the fourteenth row of holes in the drum, counting from the left. This means that the code contacts in that particular series are those which will be engaged by the contact 12^a and are those which will control the circuit when the drum is set into operation. The lever 65 can be moved to any other position, to bring the contact point 12^a into alinement with any other series of contacts on the drum, by first depressing the finger piece 68 to release the plunger to permit the lever 65 to be swung in one direction or the other, and the proper alinement in the newly selected position will be determined by the engagement of the plunger in the corresponding pocket after the selection has been made by means of the pointer on the scale.

The pins 52, 52 which have been described are the same as the pins 11, 11, referred to in Fig. 1, and as there described, are arranged in code relation, the disposition being such that the same code signal will be repeated a number of times.

The drawings illustrate the device with the code signal selected being No. 14, and it will be seen that there the signal given will be a long ring followed by a short ring, the touching or nearly touching pins amounting to a continuous contact piece. If the selector were moved over to No. 4, the signal would be two rings of medium length. Obviously, each of the series could be provided with its own contact pins or any lesser number of the series may be utilized. The pins are interchangeable and any code may be secured and, up to the capacity of the machine, any number of codes may be selected from.

The relay 14 is mounted upon the base-plate 24 and, since the particular construction of this relay is no part of my present invention, it suffices to say that the armature

15 is normally retracted, as pointed out with reference to Fig. 1, and that, when the windings of the relay are energized, the armature is attracted to make engagement with the contact member 16.

The rods 55 are connected with one terminal of the relay, by means of the insulated conductor 72, and the other terminal of the relay windings is connected with the binding post 73 by means of an insulated conductor 74. The binding post 75 is grounded to the base of the device, as is also the armature. The armature contact is connected with the binding post 76 by means of the conductor 77 and these electrical connections are the same as those pointed out in the description of Fig. 1. The battery is connected across the binding posts 73 and 75 and the line is connected across the posts 73 and 76.

At one side of the machine, I provide a button 17, which operates a spring 78 grounded to the frame 24 and, when the button is depressed, it makes contact with an insulated spring 18 which is connected with one of the rods 55 by means of an insulated conductor 79. It will be seen that when the button 17 is depressed, circuit is closed in shunt of the drum contacts and any special manual signal may be given.

As before pointed out, the contact between the pins on the drum and the spring 12 controls the circuit of the relay which, in turn, controls the line circuit. By moving the finger piece 68 one way or the other, any series of signals may be selected and, if various persons who are likely to be called are acquainted with their signals, according to the numbers assigned to them, they may respond to the signal in the prescribed manner wherever they should happen to be, in a large institution as hereinbefore pointed out, where the signal is given in a number of places at the same time. For instance, if a person whose number is 14 is desired, the finger piece is moved to No. 14, the contact 12^a is thereby brought into proper alinement with the corresponding series of code contacts, but because of a blank space 8^a, illustrated in Fig. 6, there will be no immediate signal. The handle is then turned to wind the device and upon release the drum begins to rotate. The drum makes a complete revolution and during this revolution the various contacts in the selected series are brought into engagement with the spring. The proper code signal is thus given and the arrangement is preferably such that the code signal is repeated several times. After the revolution of the drum is completed, it is automatically stopped, as heretofore described, and, if desired, the same operations may be gone over without a new selection. In a factory, for instance, the button 17 may be used to signal the starting and stop-

ping times or as a fire warning or for any other especial purpose.

I claim as new and desire to secure by Letters Patent:

1. In combination a metal drum having a plurality of rows of sockets therein, removable metal pins secured in said sockets, said pins forming a plurality of code surfaces on the circumference of said drum, a metallic spring for closing contact with said code surfaces, a pin mechanically connected to said spring but insulated therefrom, an index plate having a plurality of indicia thereupon corresponding to said code surfaces, said drum mounted on said plate and a slotted lever having a handle and pointer movable over said index plate, said pin engaging said slot.
2. In a code signaling device, a metallic drum, a plurality of rows of sockets in said drum, metal contact pins interchangeably fitting into said sockets, said pins having heads substantially contiguous when said pins are inserted in adjacent sockets, said pins thereby forming code surfaces of various length, a contact spring having a sharp point for engaging said pins to close a circuit therethrough, said spring shiftable into alinement with each of said pins.
3. In a code signaling device, a metallic drum, a plurality of evenly spaced sockets therein, removable metal contact pins in said sockets, said pins having heads of a width substantially the same as the pitch of said sockets, said pins forming code projections of various lengths, a contact spring for co-operating with the heads of said pins to close a circuit for periods of various lengths, said spring shiftable into engagement with said pins.
4. In a code transmitter, a rotatable drum, a plurality of code projections of different length, said projections comprising a plurality of conducting pins placed adjacent each other on said drum, a relatively stationary contact for making electrical contact with said projecting surfaces, and means to rotate said drum to bring said code projections and said stationary contact into electrical connection.
5. In a code transmitter, a rotatable drum, a plurality of projecting code surfaces of different length arranged in rows on the surface of said drum, said projections comprising a plurality of conducting pins mounted adjacent each other on said drum, an adjustable contact comprising a spring having a pointed pin mounted thereon, said pin extending into the path of said code projections, and means to rotate said drum to bring said projections in contact with said pin.
6. In a code transmitter, a base plate, a rotatable drum mounted on said base plate, a plurality of rows of code projections on said drum, a plurality of guide bars, said bars mounted on said base plate parallel to said drum, a movable carriage mounted on said guide bars, a spring contact for making electrical connection with said code projections on said carriage and automatic locking means for shifting said carriage to bring said spring in register with said rows of projections.
7. In a code transmitter, a base plate, a rotatable drum mounted on said base plate, a plurality of rows of code projections on said drum, a plurality of stationary guide bars, said guide bars mounted on said base plate parallel to said drum, a slidable carriage mounted on said guide bars, a contact on said carriage for making electrical contact with said projections, a slot in said base plate below said guide bars, a pin on said carriage projecting through said slot, a lever mounted on the lower surface of said base plate, said lever having a slot therein for engaging said pin to adjust the carriage, and means to drive said drum.
8. In a code transmitter, a base plate, a rotatable drum having a plurality of projecting code surfaces, a plurality of guide bars mounted on said base plate parallel to said drum, a slidable carriage mounted on said guide bars, a spring on said carriage having its extremity extending into the path of said code projections, said carriage being cut away at one side to expose the guide bar therethrough, and a spring on said carriage contacting at all times with said exposed portion of the guide bar.
9. In a code transmitter, a base plate, a rotatable drum mounted on said base plate, a plurality of rows of code projections of different length on said drum, said projections comprising a plurality of contiguous pins mounted on said drum, a pair of stationary guide bars mounted on said base, a slidable carriage mounted on said guide bars, a spring having a contact pin mounted on the free end thereof for engaging the code projections on said drum, a lever for shifting said carriage, and automatic locking means bearing a pointer for moving said lever.
10. In combination, a drum having a plurality of code projections of various lengths thereon, said code projections comprising a plurality of contiguous pins on said drum, a shiftable carriage, a contact spring on said carriage, a pointed contact pin on the extremity of said spring, a guide spring substantially co-extensive with said contact spring, and having a guide opening for guiding said contact pin.
11. In combination, a base plate, a rotatable drum having a plurality of projecting code surfaces, said code surfaces being formed of a plurality of removable contiguous pins, a pair of guide bars mounted

on said base, a slidable carriage on said bars, said carriage being cut away to expose a portion of one of said guide bars, a spring on said carriage contacting with said exposed guide bar, a contact spring on said carriage, said spring having a pointed contact pin on its extremity, a guide spring for holding said contact spring and pin in proper position with respect to said drum, and means to rotate said drum.

12. In combination, a rotatable drum, a spring motor to drive said drum, a stop on said drum, a relatively stationary stop for engaging the stop on said drum, said spring motor having a winding shaft, and a cam on said shaft for tripping said stationary stop to release the drum upon initial movement of said shaft to wind the spring motor.

13. In a code transmitter, a rotatable drum having a plurality of rows of projecting contact surfaces; a guide, a carriage upon said guide, a spring on said carriage for contacting with the code surface of said drum, an index plate having a plurality of locking sockets, a lever for shifting said carriage, said lever having a spring extension, an index above said index plate and a locking pin beneath said index plate for cooperating with said locking sockets, said

index and said pin being mounted on said spring extension.

14. In combination a base plate, a rotatable drum mounted on said base plate, a plurality of rows of code projections mounted on said drum, a guide bar mounted on said base parallel to the axis of said drum, a carriage mounted on said guide bar, a spring on said carriage, said spring cooperating with said code projections, a pivoted lever mounted on the bottom of said base plate, said lever having a slot therein, said carriage having a pin projection through the base plate and into the slot in said pivoted lever, a spring extension on said lever, a pointer cooperating with indicia on the top of said base plate and automatic locking means controlled by said spring extension for locking said contact spring in alinement with one of said rows of code projections.

In witness whereof, I hereunto subscribe my name this 20th day of August, A. D. 1913.

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Witnesses:

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