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No. 773,374.

PATENTED OCT. 25, 1904.

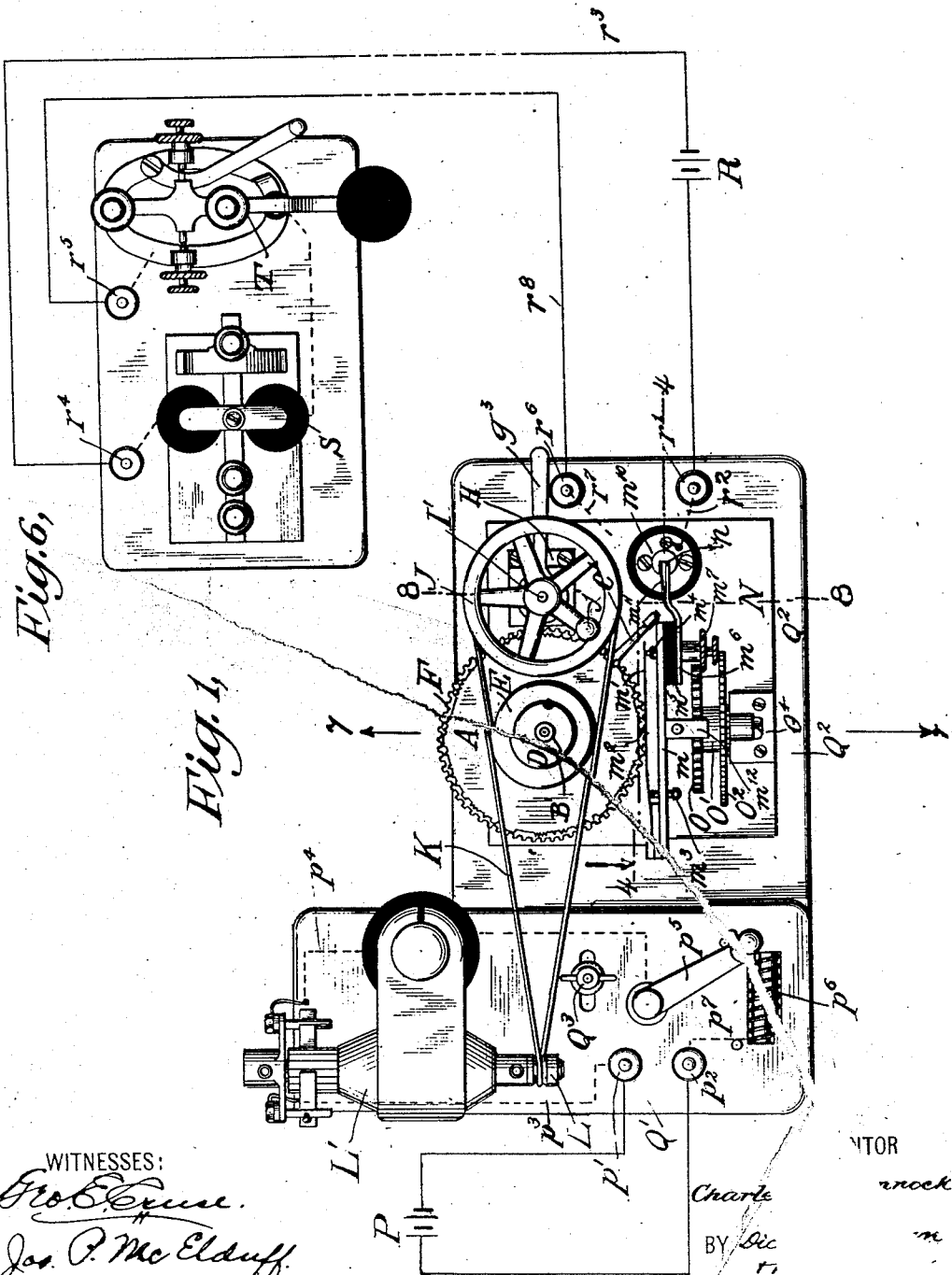
C. E. CHINNOCK.

INSTRUMENT FOR THE TEACHING AND PRACTICE OF TELEGRAPHY.

APPLICATION FILED JAN. 20, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES:  
*Geo. E. Chase*  
*Joe. P. McElduff*

Charles  
BY *Geo. E. Chase*  
HIS

INVENTOR  
*Charles E. Chincock*

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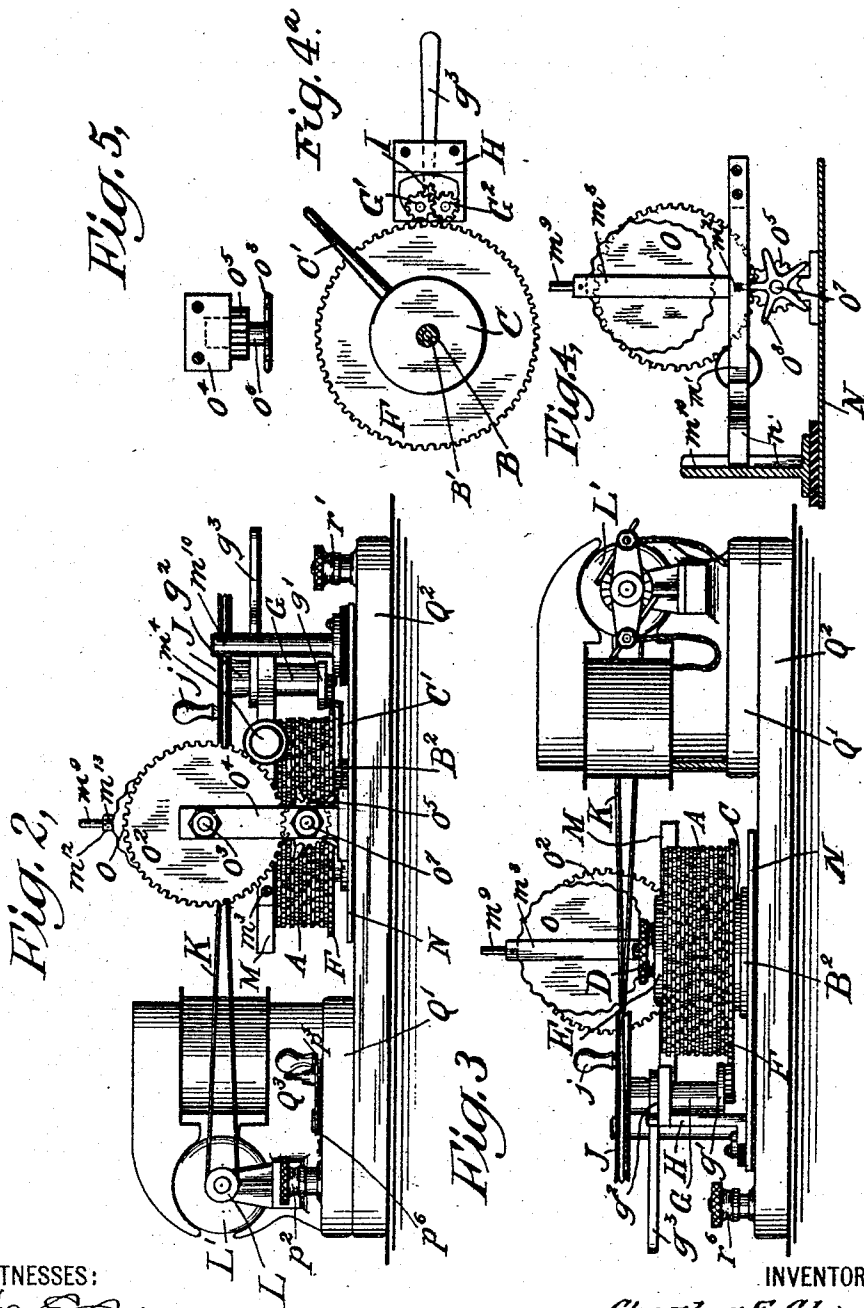
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3 SHEETS—SHEET 2.



WITNESSES:

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*Dickinson, Brown & Ralston*

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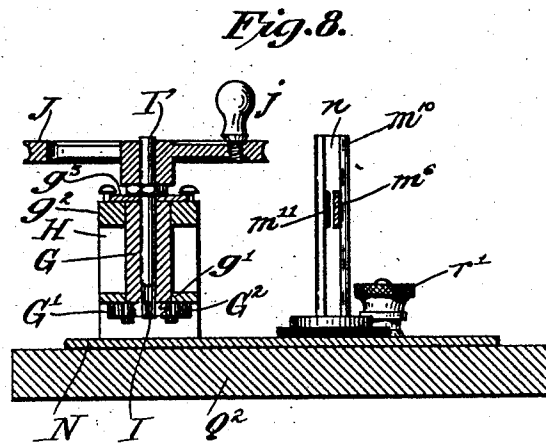
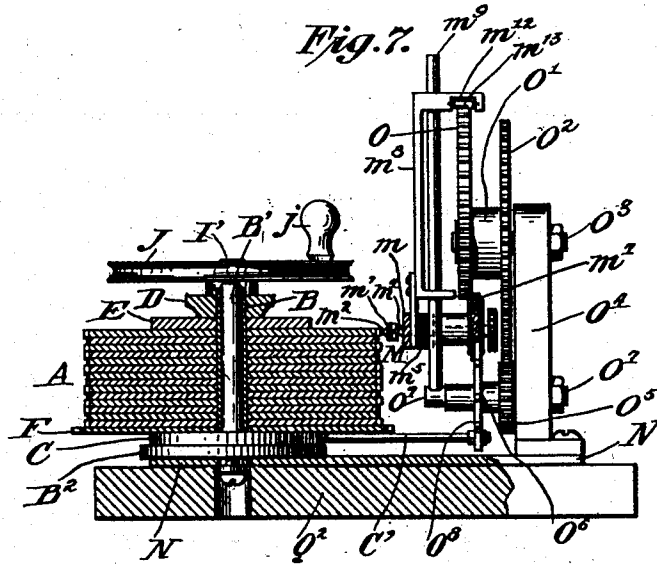
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APPLICATION FILED JAN. 20, 1902.

NO MODEL.

3 SHEETS—SHEET 3.



Witnesses  
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*S. C. Yeaton, Jr.*

*Charles E. Chinnoch*  
 Inventor  
 By his Attorney *Dickinson Brown and Gacener*

## UNITED STATES PATENT OFFICE.

CHARLES E. CHINNOCK, OF BROOKLYN, NEW YORK.

## INSTRUMENT FOR THE TEACHING AND PRACTICE OF TELEGRAPHY.

SPECIFICATION forming part of Letters Patent No. 773,374, dated October 25, 1904.

Application filed January 20, 1902. Serial No. 90,429. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES EDWARD CHINNOCK, of the borough of Brooklyn, city and State of New York, have invented a new and useful Improvement in Instruments for the Teaching and Practice of Telegraphy, of which the following is a specification.

I will describe an instrument embodying my improvement and then point out the novel features in claims.

In the accompanying drawings, Figure 1 is a top view of an instrument embodying my improvement. Fig. 2 is an elevation of one side of the same. Fig. 3 is an elevation of the other side of the same. Fig. 4 is an elevation of certain parts at the plane of the dotted line 4 4, Fig. 1. Fig. 4<sup>a</sup> is an inverted plan of the disk-actuating gears. Fig. 5 is an inverted plan of the star-wheel and pinion of Fig. 4. Fig. 6 is a top view of a telegraphic sounder to be used in connection with my instrument. Fig. 7 is a view in elevation, partly in section, on the line 7 7 of Fig. 1. Fig. 8 is a sectional elevation on the line 8 8 of Fig. 1.

Similar letters of reference designate corresponding parts in all the figures.

A designates a number of disks, preferably made of metal and secured together one above the other upon a tubular shaft B, rising from a collar C, and made of such form that it will protrude above the uppermost disk A, so that it may be engaged with a device for holding the disks in place. As shown, its protruding portion is externally screw-threaded and has engaged with it a nut D. The tubular shaft B surrounds a stationary stud B', and the collar C rests upon a hub or cylinder B<sup>2</sup>, which rises from a metal base-plate N. Preferably a disk E will be loosely slipped onto the tubular shaft before applying the nut to the latter.

With the disks is combined a gear-wheel F. As here shown, it is affixed to the collar C, and hence it transmits rotary motion to the disks A. This gear-wheel engages with either one of two small gear-wheels G' G<sup>2</sup>, (see Figs. 4<sup>a</sup> and 8,) mounted upon studs or screws fastened to a collar g' at the lower end of a sleeve G. The upper end of the sleeve G is provided with a collar G<sup>2</sup> and from this extends an arm g<sup>3</sup>, by which the sleeve may be oscillated to bring either of the gear-wheels G' G<sup>2</sup> into engage-

ment with the gear-wheel F. The sleeve G is supported in a bracket H, rising from the base-plate N. A pinion I, arranged at the end of a shaft I', which passes through and is supported by the sleeve G, so that it will be free to rotate independently of said sleeve, is in engagement with the gear-wheel G', as shown in Fig. 4<sup>a</sup>. In Fig. 8 the wheels G' G<sup>2</sup> are partly broken away to show the pinion I behind. The shaft I' while rotating constantly in one direction will be capable of rotating the disks A in reverse directions, according to which of the two gear-wheels G' G<sup>2</sup> is put into engagement with the gear-wheel F by oscillating the sleeve G by turning the arm g<sup>3</sup> to the right or to the left. The upper end of the shaft I' has affixed to it a pulley J, which will preferably be provided with a hand-crank j. A belt K passes around this pulley and also around a pulley L, which is comprised in an electromagnetic generator L'.

The several disks A are externally provided with projections corresponding to letters of the Morse alphabet. Opposite them is an electric circuit-breaker M, which is supported so that it may be adjusted vertically to a position opposite any one of the disks. It has a main part m and a relatively movable part m'. The latter has a tendency to move outwardly away from the former and is provided with a projection m<sup>2</sup>, which will coact with the projections on the opposite disk A in such manner that as each projection passes it that projection will press the movable part m' of the circuit-breaker against the other part, m, of the circuit-breaker and hold it there for a period corresponding with the length of the projection. The tendency of the relatively movable part m' of the circuit-breaker to outward movement may be varied by means of a screw m<sup>3</sup> impinging against it and engaging with a tapped hole in the main part m. The free end of the relatively movable part m' of the circuit-breaker coacts with a contact-point m<sup>4</sup>, which extends through the main part m of the circuit-breaker. It is, however, insulated from the part m of the circuit-breaker. This contact-point is made in the form of a screw and passes through a hole in the main part m of the circuit-breaker without touching the latter. A block of insulating ma-

terial  $m^5$  is fastened to the main part  $m$  of the circuit-breaker adjacent to the said hole and to this block of insulating material a metal piece  $m^6$  is fastened. The screw  $m^4$  engages with a tapped hole in this metal piece  $m^6$ . It may be therefore adjusted toward and from the movable part  $m'$  of the circuit-breaker. A nut  $m^7$  is combined with the screw to clamp it in position.

The main part  $m$  of the circuit-breaker is secured to the lower end of a metal carrier  $m^8$ , which fits loosely upon a metal rod  $m^9$ , so as to be free to slide vertically upon the same. The metal piece  $m^6$  extends into the groove  $n$  of a metal post  $m^{10}$ , rising from the base-plate N, in which groove said piece  $m^6$  slides freely up and down. A spring  $m^{11}$ , fastened to one side of the metal piece  $m^6$ , bears against one part of the groove, so as to insure electrical contact with the post  $m^{10}$ . This metal post  $m^{10}$  is insulated from the base-plate N. At the top of the carrier  $m^8$  is a metal cross-bar  $m^{12}$ , preferably provided on its under side with an antifriction roller or ball  $m^{13}$ , which bears upon the top of a metal cam O, affixed to a metal shaft O', also having a metal gear-wheel O<sup>2</sup> affixed to it and mounted to turn freely upon a metal stud O<sup>3</sup>, supported by a metal post O<sup>4</sup>, extending upwardly from the base-plate N.

The cam O raises the circuit-breaker M and permits it to be lowered by gravity. The gear-wheel O<sup>2</sup> engages with a pinion O<sup>5</sup>, affixed to a shaft O<sup>6</sup>, rotating freely about a stud O<sup>7</sup>, fastened to the post O<sup>4</sup>. This stud O<sup>7</sup> constitutes the support for the metal rod  $m^9$ . The shaft O<sup>6</sup> has affixed to it a pin-wheel or star-wheel O<sup>8</sup>, with which coacts an arm C', extending from the collar C, so that for every rotation of the disks A the star-wheel O<sup>8</sup> will be rotated sufficiently to cause the cam O to adjust the circuit-breaker M vertically from a position opposite one of the disks to a position opposite one of the others.

P designates a battery one pole of which is connected with a binding-post  $p'$  and the other pole of which is connected to the binding-post  $p^2$  upon a board Q', forming the base-piece for the electromagnetic generator L'. This base-piece Q' is mounted upon a base-piece Q<sup>2</sup>, and the latter has the base-plate N arranged upon it. A screw and nut Q<sup>3</sup> secure the base-pieces Q' and Q<sup>2</sup> together. In the base-piece Q' is a slot through which the screw passes, and this slot extends in such direction as to provide for adjusting the base-piece Q' relatively to the base-piece Q<sup>2</sup> for the purpose of tightening or loosening the belt K. From the binding-post  $p'$  a wire  $p^3$  extends the circuit to one brush of the electromagnetic generator L'. The other brush of that motor is in electrical communication with a wire  $p^4$ , which extends to a switch-arm  $p^5$ , which may be moved over a resistance device, (here shown as consisting of a coil  $p^6$ , of

wire, such as German silver,) and which is connected at one end by a wire  $p^7$  with the binding-post  $p^2$ . According to the position of the switch-arm  $p^5$  upon the coil  $p^6$  so will vary the amount of wire  $p^6$  in circuit.

R designates a battery one pole of which is connected by a wire to a binding-post  $r'$ . The electric circuit from the latter is extended by a wire  $r^2$  to the post  $m^{10}$ . The other pole of the battery R is connected by a wire  $r^3$  with a binding-post  $r^4$  of a telegraphic sounder S and key T. The other binding-post,  $r^5$ , of the telegraphic sounder is connected by a wire with the key T and by wire  $r^8$  with a binding-post  $r^6$ . The circuit from the latter is extended by a wire  $r^7$  to the base-plate N, with which the circuit-interrupting disks A are in electrical connection.

Not only may the speed of the rotation of the disks A be varied by manipulations of the switch-lever  $p^5$  and the direction of their rotation be reversed by manipulations of the arm  $g^3$  and messages be changed by the means described for altering the relation between the circuit-changer and the different disks A, but the disks themselves may be rotated by hand relatively to each other, so as to adjust them in different relations in order that when the circuit-changer ceases to operate with one and begins to operate with another it may begin at a different point upon the other, and the disks may also be turned upside down and subsequently adjusted into relation with each other by means of the nut D coacting with the tubular shaft B or other suitable means for firmly securing the disks in fixed relation to each other.

The operation of the instrument may be briefly described as follows: The proper electrical connections being established; the operator shifts the pinions G' G<sup>2</sup> for proper engagement with the large gear-wheel F according to the direction of rotation to be imparted to the group of disks A. The pulley or hand-wheel J is now turned, with the result that the disks are rotated around the shaft B', causing the projections on the edge of one of the disks to coöperate with the circuit-breaker M, and thus sound one at a time the characters for which the projections stand and producing thereby a telegraphic message. As the projections on one of the disks run out the arm C' comes in contact with the star-wheel O<sup>8</sup>, which through the medium of the pinions and gear-wheel O<sup>5</sup> O<sup>2</sup> operates the cam O, which cam, acting on the roller  $m^{13}$ , shifts the circuit-breaker to the next disk for coöperation with the projections thereon to produce telegraphic sounds upon the continued rotation of the hand-wheel J in the same manner as before.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an instrument for the teaching and practice of telegraphy, the combination with

a number of detachable parts arranged in any desired order side to side and provided on edges with projections for producing a telegraphic message, and means for moving said parts in the direction of the length of said edges continuously throughout the series, of a circuit-breaker constructed to coact with one of said parts at a time, and means for producing a relative movement between said parts and circuit-breaker so that any one of the parts may coact with the circuit-breaker.

2. In an instrument for the teaching and practice of telegraphy, the combination with a number of detachable parts arranged in any desired order side to side and provided on edges with projections for producing a telegraphic message, and means for moving said parts in the direction of the length of said edges continuously throughout the series at any speed, of a circuit-breaker constructed to coact with one of said parts at a time, and means for producing a relative movement between said parts and circuit-breaker so that any one of the parts may coact with the circuit-breaker.

3. In an instrument for the teaching and practice of telegraphy, the combination with a number of parts arranged in any desired order side to side and provided on edges with projections for producing a telegraphic message, and means for moving said parts in the direction of the length of said edges continuously throughout the series in reverse directions, of a circuit-breaker constructed to coact with one of said parts at a time, and means for producing a relative movement between said parts and circuit-breaker so that any one of the parts may coact with the circuit-breaker.

4. In an instrument for the teaching and practice of telegraphy, the combination with a number of parts arranged side to side and provided on edges with projections for producing a telegraphic message, and means for moving said parts in the direction of the length of said edges at any speed, in reverse directions, of a circuit-breaker constructed to coact with one of said parts at a time, and means for producing a relative movement between said parts and circuit-breaker so that any one of the parts may coact with the circuit-breaker.

5. In an instrument for the teaching and practice of telegraphy, the combination with a number of parts, arranged side to side and provided on edges with projections for producing a telegraphic message, and means for moving said parts in the direction of the length of said edges, of a circuit-breaker constructed to coact with one of said parts at a time, and means for automatically producing a relative movement between said parts and circuit-breaker so that the parts may coact with the circuit-breaker in succession.

6. In an instrument for the teaching and

practice of telegraphy, the combination with a number of disks arranged side to side and provided peripherally with projections for producing a telegraphic message and means for moving the disks in their own planes and about an axis, of a circuit-breaker constructed to coact with one of said disks at a time, and to engage the several disks in succession and automatically throughout the series, and means for producing a relative movement between the disks and circuit-breaker so that any one of the disks may coact with the circuit-breaker.

7. In an instrument for the teaching and practice of telegraphy, the combination with a number of parts, arranged side to side and provided on edges with projections for producing a telegraphic message and means for moving said parts in the direction of the length of said edges, of a circuit-breaker constructed to coact with one of said parts at a time, and means comprising an arm moving with said parts, a star-wheel operated by said arm, once for each movement of said parts, and a cam operated by said star-wheel to produce a relative movement between said parts and circuit-breaker so that any one of the parts may coact with the circuit-breaker.

8. In an instrument for the teaching and practice of telegraphy, the combination with a number of parts arranged side to side and provided on edges with projections for producing a telegraphic message, means for supporting them in such position that they may be adjusted to have parts of the length of one opposite different parts of the length of another, and means for moving said parts in the direction of the length of said edges, of a circuit-breaker constructed to coact with one of said parts at a time, and means for producing a relative movement between said parts and circuit-breaker so that any one of the parts may coact with the circuit-breaker.

9. In an instrument for the teaching and practice of telegraphy, the combination with a number of parts arranged side to side and provided on edges with projections for producing a telegraphic message, means for supporting them so that one may be turned upside down to rearrange it in relation with another, and means for moving said parts in the direction of the length of said edges, of a circuit-breaker constructed to coact with one of said parts at a time, and means for producing a relative movement between said parts and circuit-breaker so that any one of the parts may coact with the circuit-breaker.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES E. CHINNOCK.

Witnesses:

JOS. P. McELDUFF,  
P. H. E. STARR.