

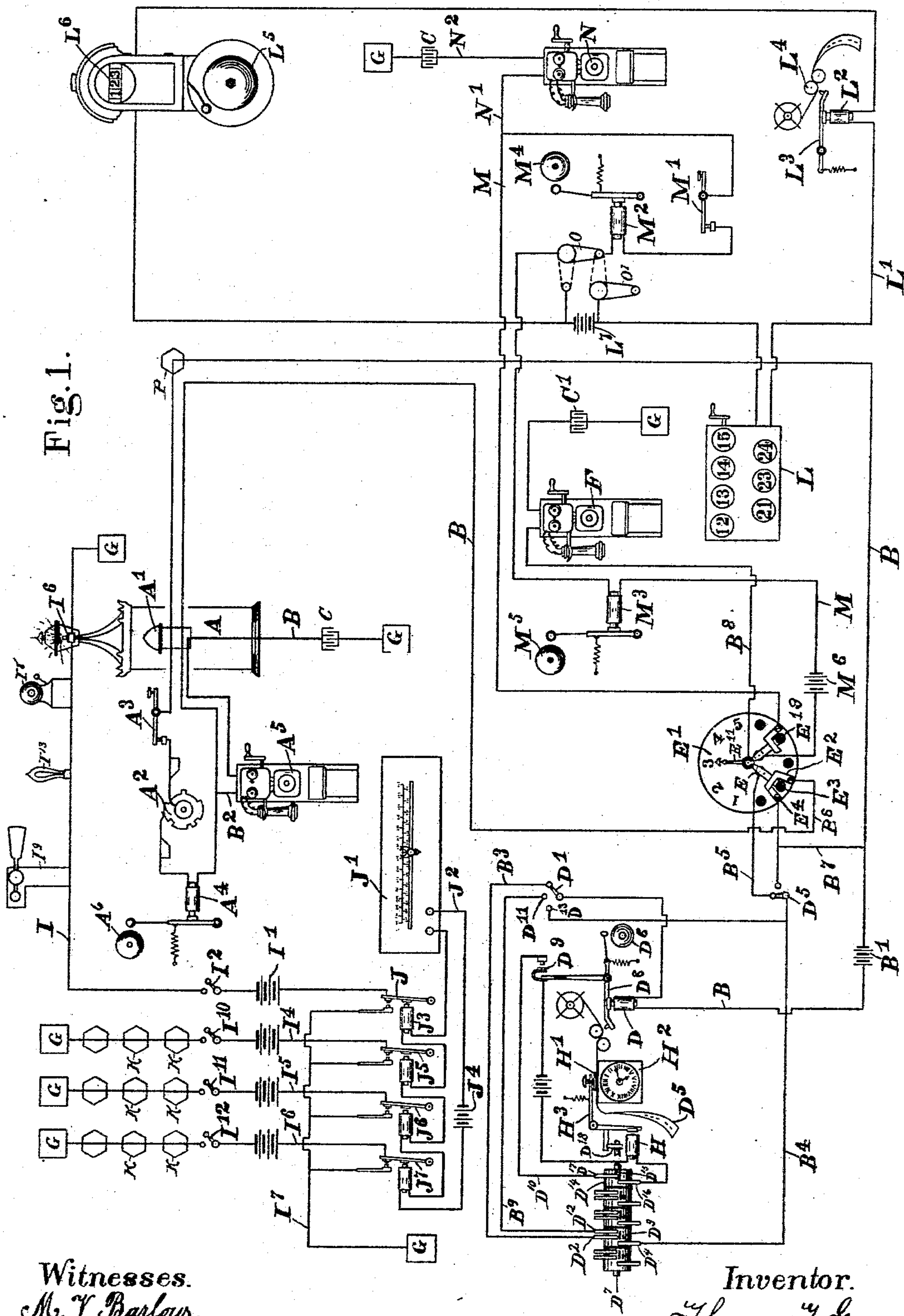
(No Model.)

2 Sheets—Sheet 1.

T. F. GAYNOR.  
SYSTEM FOR SIGNALING AND COMMUNICATION.

No. 515,761.

Patented Mar. 6, 1894.



Witnesses.  
M. V. Barlow.  
William J. Fitzgerald.

Inventor.  
Thomas F. Gaynor.

(No Model.)

2 Sheets—Sheet 2.

T. F. GAYNOR.

# SYSTEM FOR SIGNALING AND COMMUNICATION.

No. 515,761.

Patented Mar. 6, 1894.

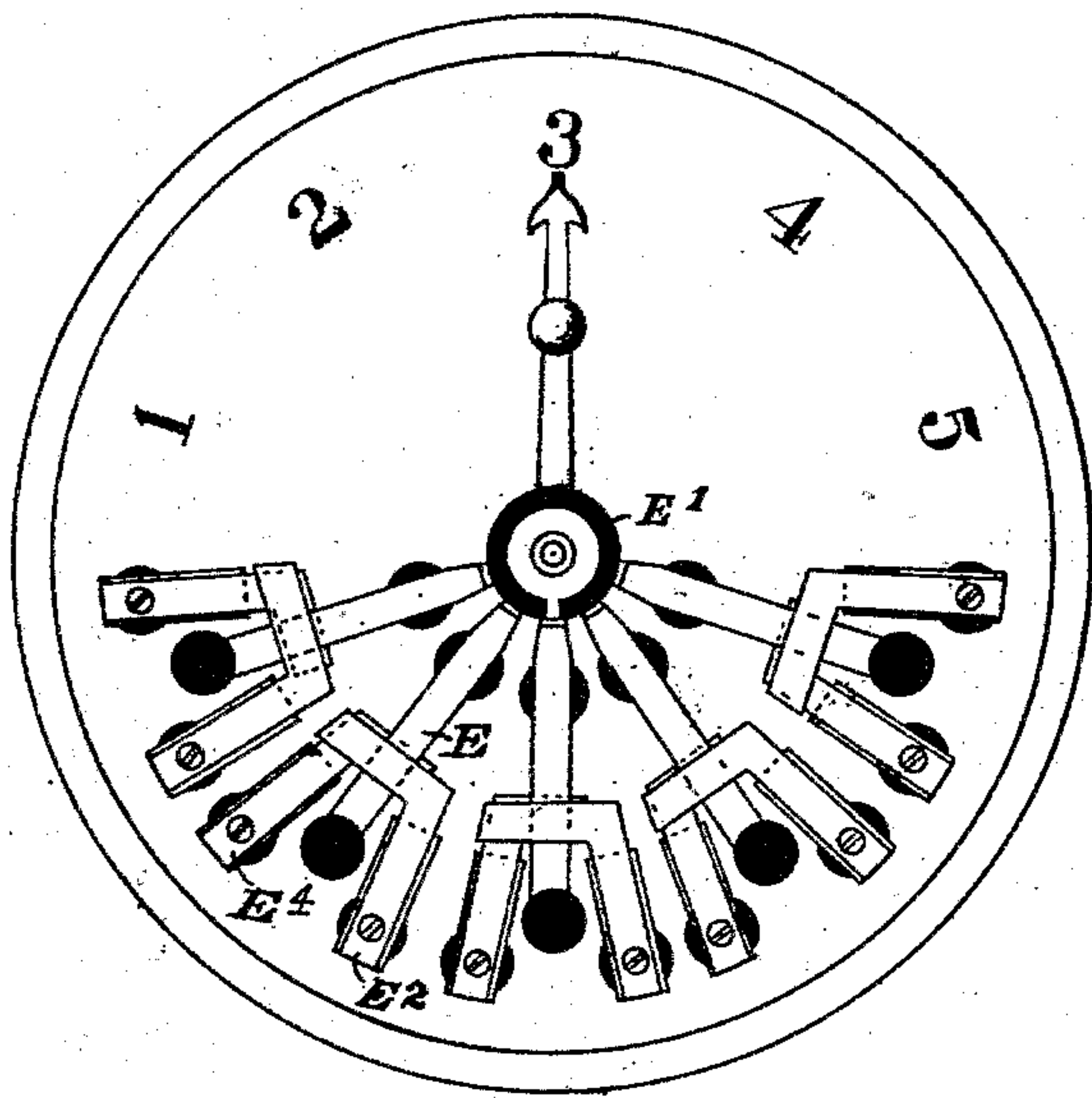


Fig. 2.

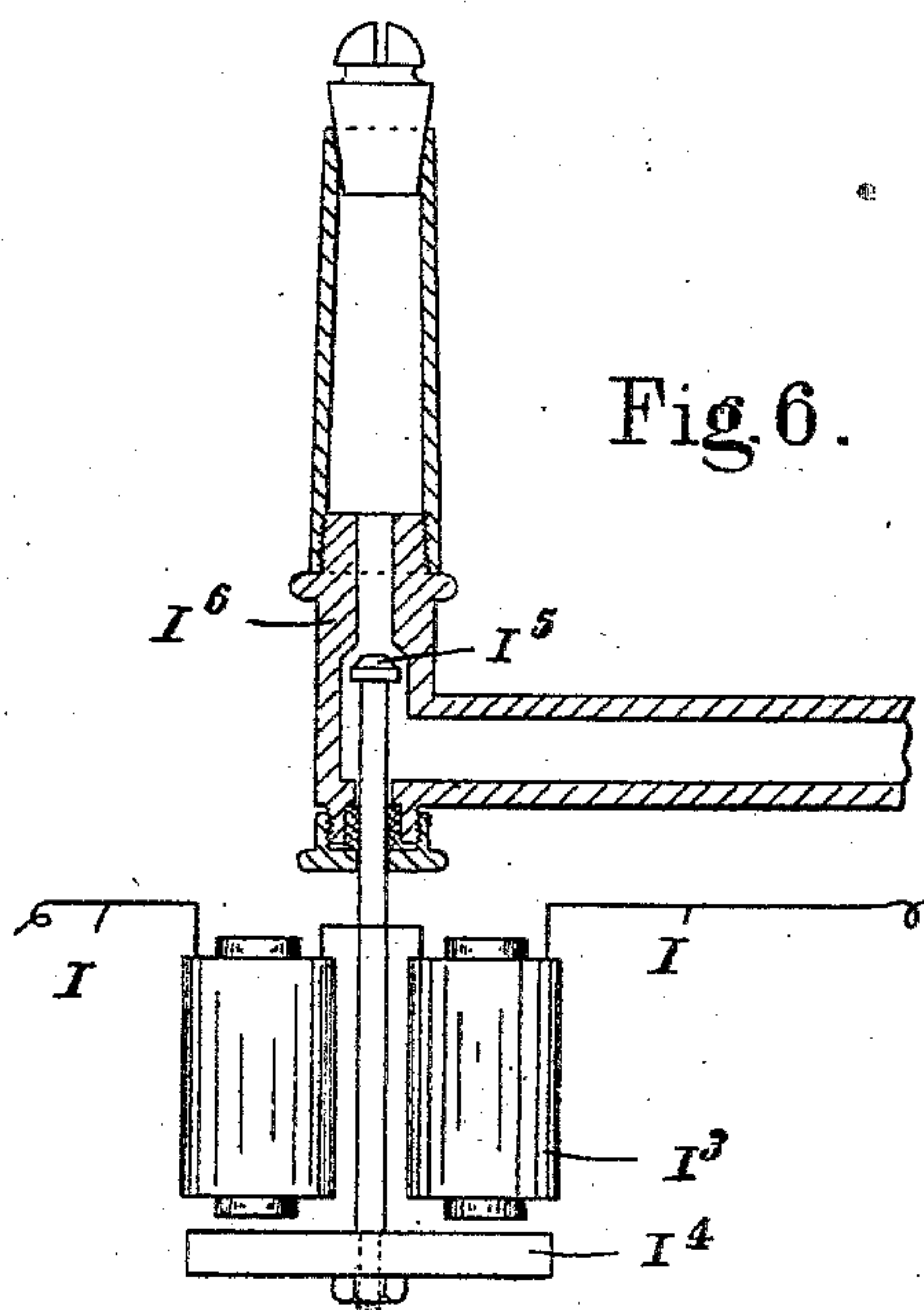


Fig. 6.

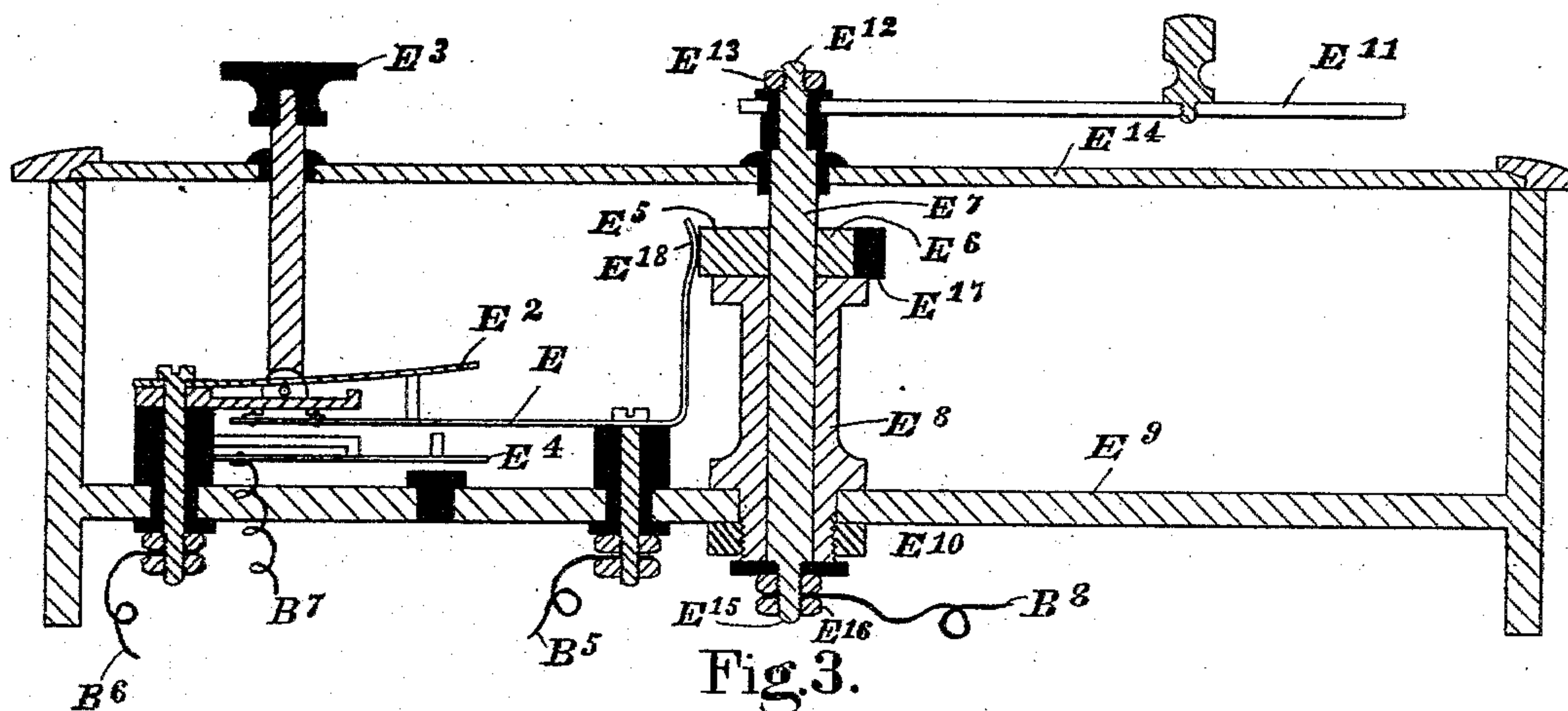


Fig. 3.

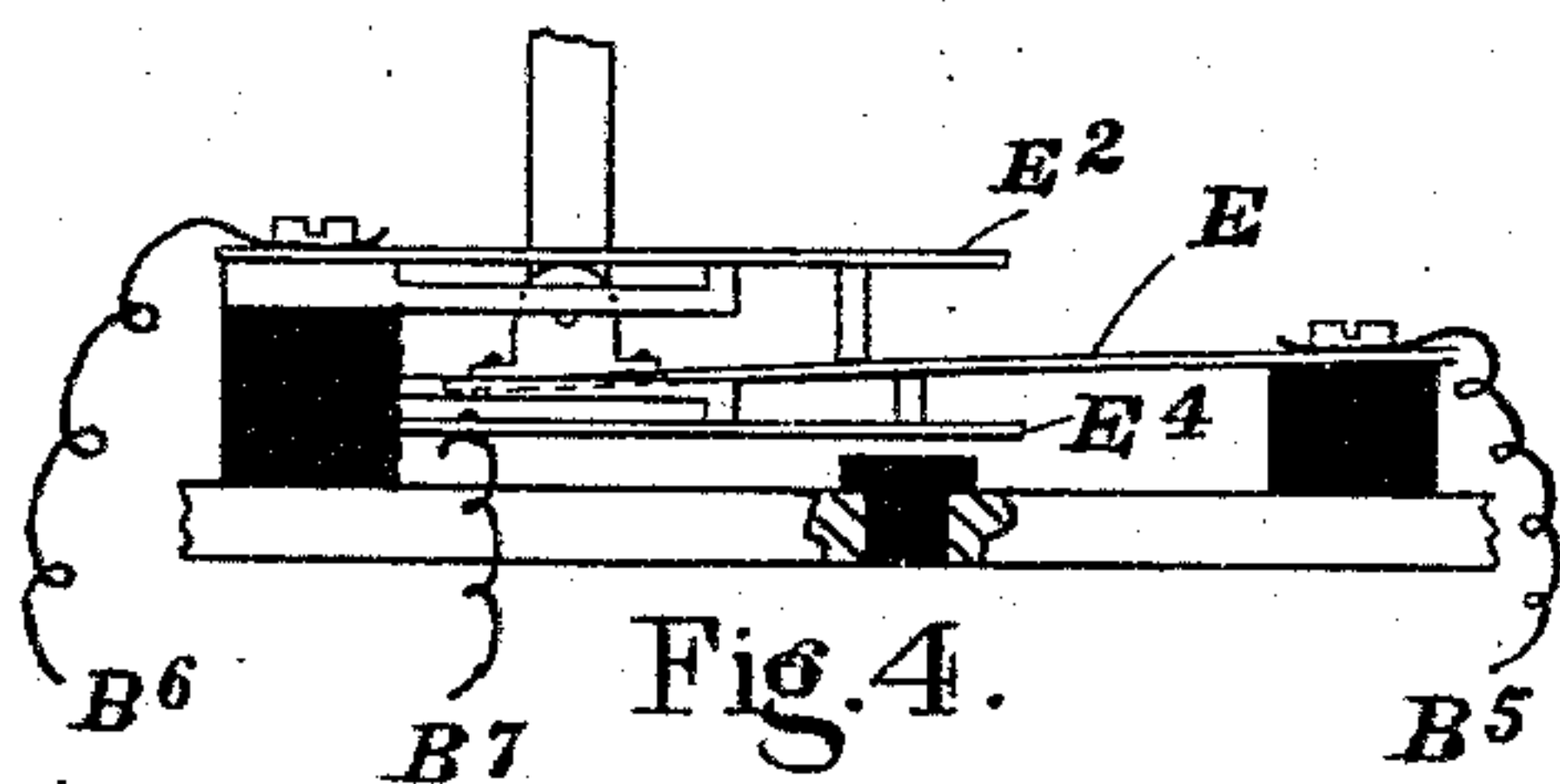


Fig. 4.

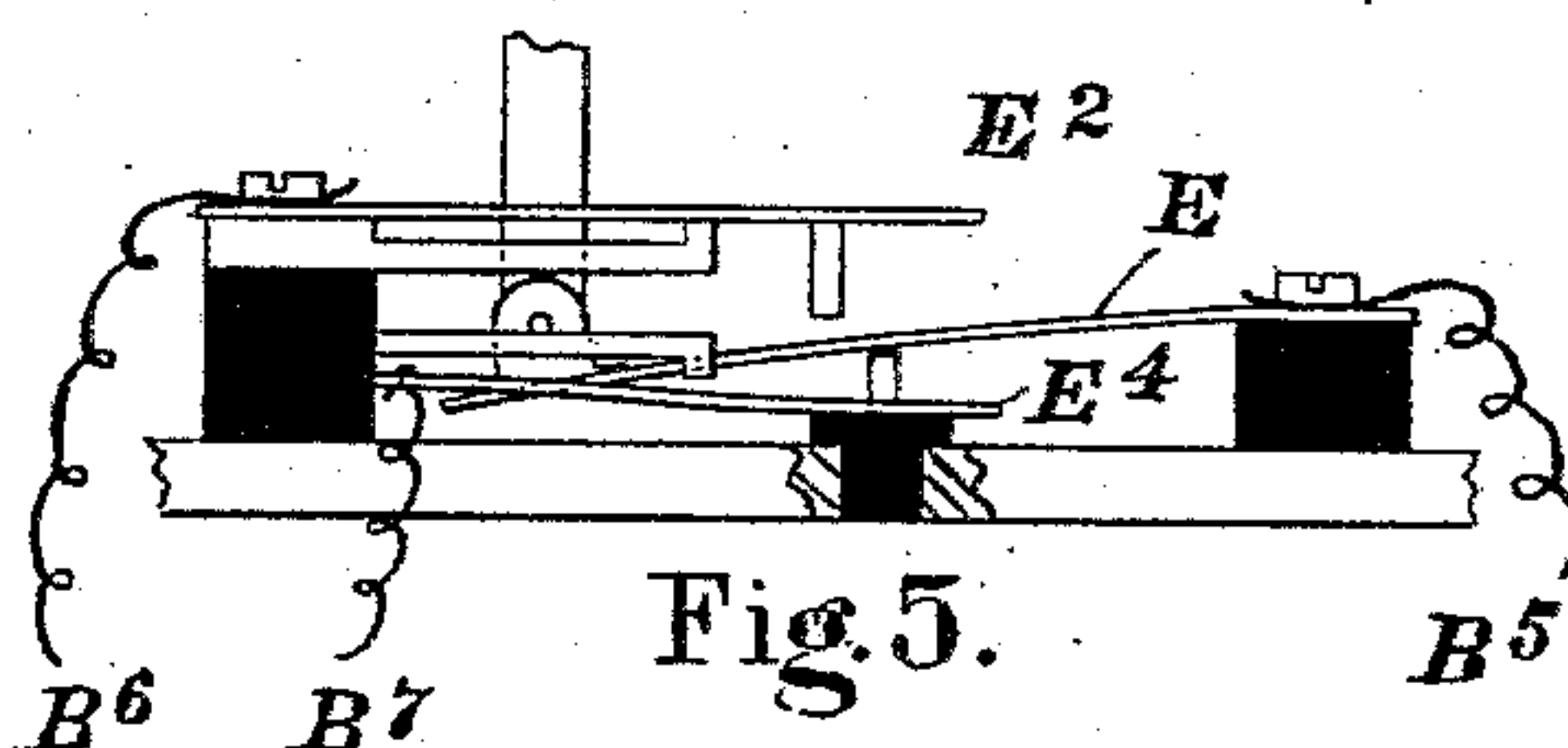


Fig. 5.

**Witnesses.**

Milt. V. Barlow,  
William A. Fitzgerald.

*Inventor.*

Thomas W. Gaynor.



# UNITED STATES PATENT OFFICE.

THOMAS F. GAYNOR, OF LOUISVILLE, KENTUCKY, ASSIGNOR TO THE UNITED  
FIRE ALARM AND POLICE SIGNAL COMPANY, OF WEST VIRGINIA.

## SYSTEM FOR SIGNALING AND COMMUNICATION.

SPECIFICATION forming part of Letters Patent No. 515,761, dated March 6, 1894.

Application filed December 30, 1891. Serial No. 416,604. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS F. GAYNOR, of Louisville, in the county of Jefferson, State of Kentucky, have invented certain new and useful Improvements in Systems for Municipal Signaling and Communication, of which the following is a description, taken together with the accompanying drawings, which form a part of this specification.

10 This invention relates to that class of electric signaling and telephonic mechanism known as police signal and telephone systems and which are adapted to suit the requirements of municipal police departments.

15 In the modern police system of signaling and communication the following features are deemed desirable, namely:—First. Means for automatically or manually telegraphing report signals and special calls from an out-  
20 lying signal station to the central office and suitable devices at the central office to receive such calls, and send back to the station the requisite signals also. Second. Tele-  
25 phonic devices at the outlying station for oral communication with the central office and corresponding telephonic mechanism at the central office to hold such communication. Third. "Answer back" mechanism at  
30 the outlying station to indicate to an officer after he makes his "report" calls that he is expected to report orally for some special in-  
structions from the central office, and the mechanism at the central office by which this may be effected. Fourth. Means at the cen-  
35 tral office for automatically recording the time a signal is received from an outlying station usually called a "time stamping" device. Fifth. Means at the outlying station for attracting the attention of the patrolman when  
40 in the vicinity of the station, either visibly or audibly and which when necessary will respond to a code of visual or audible signals;—  
together with the office mechanism by means of which such signals may be actuated from  
45 the central station. Sixth. Means at the central office for designating by signals to the stable where the patrol wagons are kept,—  
the outlying station to which the wagons or ambulance are to be brought when so re-  
50 quired and the necessary apparatus at the stable to indicate and record such signals. Seventh. Telegraph mechanism at the stable

and at the central office for independent signaling between these two places. Eighth. Telephonic mechanism at the stable and at  
55 the central office for holding conversation between these two points.

Now the object of my invention is to combine a set of mechanism in an arrangement of circuits by which all these requirements  
60 may be attained, and do this with as little complication of circuits and apparatus as possible.

With the exception of some switch connections more fully described hereinafter, the  
65 apparatus shown as forming the elements of the combinations is either old and well known, or else the subjects of former patents of mine, or applications for the same by me and which  
70 will be referred to more particularly hereinafter. The apparatus shown is therefore to be considered as a type of the kind required rather than otherwise, as any other device or  
75 machine that will perform the functions of one of those shown may be used instead.

My invention therefore consists in such a novel arrangement of apparatus and electric  
circuits connecting the same as by its means  
citizens or the members of a police depart-  
80 ment are enabled to communicate with each other, and the movement of the policemen be directed from headquarters by those in charge as already indicated;—the whole ar-  
85 rangement constituting a complete police system of signaling and communication as already stated.

My invention further consists in such novel details of switch devices and connections as are necessary to make the system operative  
90 and complete and which will be hereinafter more fully described.

I will now describe my invention in detail, referring to the drawings in which similar  
95 letters refer to similar parts throughout the several views.

Figure 1, shows a general diagram plan of the whole invention in which a complete set of central office apparatus is shown, an out-  
lying station equipped with a full set of sta-  
100 tion devices and also a stable outfit,—the whole being shown in complete circuit connection. Fig. 2, shows a top view of a novel switch device for making the signals by breaking the circuit and it also shows how



the telephonic connections with the circuits are made at the central office. Fig. 3, is a full sized vertical sectional view of the central office switch device showing the circuit breaking mechanism in its normal position and also showing how the office telephonic connection is made with the outlying station box circuit. Figs. 4 and 5, show how the circuit breaker opens the box circuit and thus gives signals on the bell in the outlying box while it keeps the circuit closed through the office register and thus preventing the latter together with the mechanism which it controls from operating when such signals are sent out. Fig. 6, shows an electric gas light flashing device that may be used to give visual signals in the night time at the outlying station.

A, represents an outlying signal station provided with a box A', containing a set of apparatus consisting of a multiple call box mechanism A<sup>2</sup>, a signal key A<sup>3</sup>, a bell mechanism A<sup>4</sup>, and a telephone apparatus A<sup>5</sup>, all being of any of the well known forms of devices of this character.

B, represents a closed electric circuit provided with a battery B', and having connection with the call box A<sup>2</sup>, the key A<sup>3</sup>, the bell magnet A<sup>4</sup>, and a branch wire B<sup>2</sup>, in which the telephone apparatus A<sup>5</sup>, is placed and which has a ground connection through a resistance or condenser C. At the central office the circuit B, is from the battery B', through the register magnet D, the "answer back" switch D', the wire B<sup>3</sup>, the contact spring D<sup>2</sup>, the insulated wheel D<sup>3</sup>, and the contact spring D<sup>4</sup>, of an "answer back" machine then through the wire B<sup>4</sup>, through the register switch D<sup>5</sup>, and the wire B<sup>5</sup>, to the middle terminal spring E, of the telephone switch device E', through the upper terminal spring E<sup>2</sup>, of the device E', and the wire B<sup>6</sup>, through the outlying station mechanism as already described to the battery B'. By this arrangement it can be seen that whenever the call box circuit is opened by means of the circuit breaker A<sup>2</sup>, or the key A<sup>3</sup>, at the outlying station A, it will cause the register magnet D, at the central office to record such signals and actuate such other signal devices as may be controlled by the register magnet. When the middle spring E, of the switch device E', is depressed by means of the button E<sup>3</sup>, at the central office, however, it will only open the circuit beyond that point as it makes contact with the lower spring E<sup>4</sup>, see Fig. 4, before it breaks contact with the upper spring E<sup>2</sup>, see Fig. 5, and the lower spring E<sup>4</sup>, having a short circuit wire connection B<sup>7</sup>, with the battery B', the circuit is thus kept closed through the register magnet D, and the latter remains inactive while the bell magnet A<sup>4</sup>, gives the signals at the station as the button E<sup>3</sup>, is manipulated at the central office. This constitutes one of the novel features of this invention when taken in connection with the other central office mechanism of a police sig-

nal system and this whole arrangement constitutes the telegraphic means of signaling between the station and central office;—automatically, by means of the call box device A<sup>2</sup>, and manually by the key A<sup>3</sup>, at the station A, and the spring key E, at the office, the magnet A<sup>4</sup>, sounding the signals at the station, and the magnet D, at the office, actuating such signaling and recording devices as may be connected therewith.

The middle telephone switch spring E, extends upwardly at its back end and makes a contact with a tooth E<sup>5</sup>, on a contact wheel E<sup>6</sup>, which is mounted upon a shaft E<sup>7</sup>, having a loose bearing in a sleeve E<sup>8</sup>, which is secured in a hole in the frame E<sup>9</sup>, by means of the nut E<sup>10</sup>. An index E<sup>11</sup>, is secured upon the upper end E<sup>12</sup>, of the shaft E<sup>7</sup>, by means of a nut E<sup>13</sup>. The dial plate E<sup>14</sup>, is provided with figures 1, 2, 3, &c., to indicate the circuit that is in connection when the index is in registering position therewith. The wire B<sup>3</sup>, which is secured to the lower end E<sup>15</sup>, of the shaft E<sup>7</sup>, by means of the nut E<sup>16</sup>, is connected through the telephone set F, and resistance or condenser C', with the ground G. The wheel E<sup>6</sup>, is incased with an insulating shell E<sup>17</sup>, upon which the end E<sup>18</sup>, of the contact spring E, rests when the tooth E<sup>5</sup>, is not in contact therewith. The shape of the tooth E<sup>5</sup>, and the shell E<sup>17</sup>, as well as the manner in which the tooth E<sup>5</sup>, and the contact spring E, makes connection, is shown in Fig. 2. It can therefore be seen that by moving the index E<sup>11</sup>, to cause the wheel E<sup>6</sup>, to make connection with the spring E, that the telephone F, becomes placed in circuit connection with the telephone A<sup>5</sup>, the ground forming part of the circuit, and that oral communication can be held between the station A, and the central office, as the circuit can be traced either over the wire B<sup>5</sup>, or else through the spring E<sup>2</sup>, and the wire B<sup>6</sup>.

One of the calls of the multiple call box A<sup>2</sup>, is usually intended to indicate through the register magnet D, at the central office and the register mechanism and tape D<sup>5</sup>, and bell D<sup>6</sup>, that it is desired to hold oral communication, hence the register magnet D, gives the requisite telephone calling up signals at the central office. Corresponding calling up signals can be given upon the bell A<sup>6</sup> of the magnet A<sup>4</sup>, at the outlying station by depressing the spring E, of the central office switch device E', by means of the button E<sup>3</sup>, see Fig. 3. The key A<sup>3</sup>, may also be used at the outlying station to give calling up signals to the magnet D, upon the office mechanism. The magnet devices shown in connection with the telephone sets A<sup>5</sup>, and F, may also be used for calling up signals.

D<sup>7</sup>, represents the shaft of a machine to indicate through the bell magnet A<sup>4</sup>, after a report signal has been sent in from the station A, that it is desired that the officer making his report shall call up the central office through the telephone A<sup>5</sup> and report for special in-



structions. This device usually gives such a signal after the report call has been sent in to the central office and is intended to do this automatically, whenever the officer makes his regular report, provided the proper switch connections are made with the circuit to accomplish this end; hence, immediately after the report call has been sent in from the station the officer hears this special signal upon the bell A<sup>6</sup>, of the magnet A<sup>4</sup>, immediately after his own signals are completed, so that it appears as though it was that his own signal was answered back, hence the name of the device. The means by which this is effected will now be described. The armature lever D<sup>8</sup>, is provided with an insulated relay contact D<sup>9</sup>, which closes an open circuit D<sup>10</sup>, through the time stamp magnet H, which causes the time stamp H', of the time stamp device H<sup>2</sup>, to make an impression of the time the signal is received, upon the tape D<sup>5</sup>. The magnet H, also causes the shaft D<sup>7</sup>, of the "answer back" machine to revolve and as notches in the wheel D<sup>3</sup>, pass beneath the contact spring D<sup>2</sup>, the circuit B, becomes broken and signals are given through the bell magnet A<sup>4</sup>. The time in which the shaft D<sup>7</sup>, makes its complete revolution is a trifle longer than the time in which the call box circuit wheel A<sup>2</sup>, makes its revolution and the notches in the wheel D<sup>3</sup>, are so arranged upon the shaft D<sup>7</sup>, as to break the circuit D, after the circuit wheel A<sup>2</sup>, has completed its signal and before it completes its own revolution. The spring D<sup>2</sup>, is shown as adapted to pass over two notches in the circuit wheel D<sup>3</sup>, hence two taps will be given upon the bell device A<sup>4</sup>, and by throwing the switch D', on the terminal D<sup>11</sup>, so as to send the circuit through the branch wire B<sup>3</sup>, and the contact spring D<sup>12</sup>, a single tap will be given upon the bell A<sup>6</sup>, as there is but one notch which passes under this spring. This whole time stamping machine and "answer back" device is fully described in application for Letters Patent filed by me March 7, 1891, Serial No. 384,172, and to which reference may be had. If it is desired that no "answer back" signals be given to the outlying signal bell A<sup>6</sup>, this can be accomplished by bringing the switch D', upon the terminal D<sup>13</sup>, and thus cut out of circuit the whole "answer back" mechanism so that the use or non use of the "answer back" device is entirely controlled by the manipulation of the switch D', and the "answer back" and time stamping service can be thus understood without further description.

Attention is called to the fact that the armature lever D<sup>8</sup>, of the register magnet D, serves as a relay by means of the contact D<sup>9</sup>, and gives signals upon the bell D<sup>6</sup>, as this combination of mechanism controlled by the single magnet D, taken together with the other magnet H, which also controls the action of the time stamp device and "answer back" machine is a novel feature in police central

office signal mechanism, as I believe all this service has never been heretofore obtained by such a simple combination of magnets and mechanism.

It is sometimes necessary to secure the attention of an officer while patrolling upon his beat in the vicinity of an outlying station, and the means by which I accomplish this will now be described. Station A, is usually provided with some method of illumination at night, either gas or electric light. If gas is to be the illuminant the device shown in Fig. 6, may be used, while if an electric light is to be used it may be put directly into the circuit I, instead of the device shown in Fig. 6. In this latter case however the circuit I, should be entirely a metallic one instead of grounded at the station for purposes of safety. The circuit I, is provided with an electric generator I', and a switch I<sup>2</sup>, by which the circuit may be opened or closed as desired at the central office. A circuit closer J, is also provided by means of which the circuit I, may be closed or opened automatically so as to give a code of signals over the circuit I, and thereby cause the gas light magnet I<sup>3</sup>, through its armature I<sup>4</sup>, to partly close the valve I<sup>5</sup>, in the gas fixture I<sup>6</sup>, see Fig. 6, and thus diminish the supply of the gas giving the light. This diminution of the light by regular intervals may be understood according to a code already established and to accomplish this regularly and automatically, the device J', is provided which controls the movement of the circuit closer J, through the circuit J<sup>2</sup>, and the magnet J<sup>3</sup>, having the generator J<sup>4</sup>. The device J', may be any kind of a mechanical or electrical device that will control the movements of the circuit closer J, and the one herein shown and described may be more clearly understood by reference to Patent No. 335,027 for electric signals granted to me on January 26, 1886. The circuit closing device J', is shown as controlling the movements of four circuit closers J, J<sup>5</sup>, J<sup>6</sup>, and J<sup>7</sup>, which are adapted to control the signals to be given over the light signal circuits I, I<sup>4</sup>, I<sup>5</sup>, and I<sup>6</sup>, to the stations K, K, K. It must be understood however that any other device that will control the currents by means of the movements of the circuit closers J, J<sup>5</sup>, J<sup>6</sup>, and J<sup>7</sup>, will answer the purpose as well as the device herein shown and referred to as I do not wish to limit myself to the use of this particular device. The circuit I, is shown as being grounded beyond the station A, and the circuit closer J, is shown as being adapted to make another ground connection through the branch I<sup>7</sup>, with the ground thus completing the circuit through the ground when the metallic part of the circuit is closed by means of the circuit closer J, and the switch I<sup>2</sup>. By this whole arrangement it can be seen that whenever the officer in charge at the central station desires to attract the attention of an officer in the night time visually but silently who may be patrolling in the vicinity of the



station A, and by whom the light thereon would ordinarily be seen it is only necessary to set the signal device  $J'$ , so as to cause it to give the proper signals over the circuit I, upon the light at the station and to maintain the same in operation until the patrolman's attention would be attracted when he would understand the meaning of the signal thus given and could act accordingly. In the day time the bell  $I^8$ , may be used if audible signals are desired to be given instead of the silent signals as at night. If a silent signal is desired in the day time instead of the audible one given by the bell  $I^8$ , this may be accomplished by substituting therefor a semaphore device  $I^9$ , or any other visual signal devices such as is used in giving signals to railroad trains or the like and which may be of any of the well known forms of construction as now in use or that might be devised for giving signals of this character and which are controlled and actuated by electro magnetic devices and which respond to impulses of an electric current sent over a circuit from some distant point. It can also be understood that by closing the circuit I, by means of the switch  $I^2$ , and the circuit closer J, for an indefinite length of time that a permanent signal can be maintained upon the circuit I, such for instance, as would be indicated by the permanent (for the time being) diminution of the gas light  $I^6$ , or the light of the electric lamp  $I^3$ , or the constant position maintained by the semaphore device  $I^9$  or the constant ringing of the bell  $I^8$ . If a bell is to be used in connection with any of the visual devices already referred to, it ought to be so constructed that the circuit would not be broken as with the ordinary vibrating bell mechanism. Such devices however are of well known construction:—a vibrating armature which only short circuits the magnet in vibrating bell devices or an electro mechanical gong which is wound up would answer this purpose and which can be understood without further description. It can also be understood that such an electric impulse as has already been referred to as passing over the circuit I, could also cause various other signal devices, such for instance, as a glass globe, or disk with suitable electro magnetic trip mechanisms to pass in front of or around the light and thus give a permanent signal if the glass were of a suitable color, such for instance, as red or green or the like. From the foregoing it can be seen that a variety of means is provided by which the attention of the patrolman may be secured when in the vicinity of the station A, and this done by the operator on duty at the central office.

When a signal has been sent in from an outlying station that the wagon or ambulance is needed the operator at the central office communicates with the driver or other person in charge of the stable by means of the devices which will now be described.

L, represents a multiple signal device adapt-

ed to give a number of signals corresponding to the numbers of the outlying signal stations over the circuit  $L'$ , in which is placed a register magnet  $L^2$ , adapted to control the pen mechanism  $L^3$ , of the register  $L^4$ , and in which is also placed the bell magnet of the bell mechanism  $L^5$ , upon which the signals are sounded. The indicator  $L^6$ , is also placed in the circuit and by means of which the number of the station may be indicated in plain figures. The bell mechanism  $L^5$ , and the indicator  $L^6$ , are of the well known construction ordinarily adapted to give fire alarm signals and can be understood without further description. The signal device L, may also be of any of the well known forms of construction or for instance, like that shown in my application for Letters Patent for an improvement in electric signal devices filed March 16, 1891, Serial No. 385,300, and to which reference may be had. The mechanism shown as being placed in the circuit  $L'$ , is adapted however to give and receive only such automatic signals as are within the capacity of the transmitter L, hence for oral communication or independent telegraphing between the central office further devices are provided, which will now be described.

M represents a circuit having a connection with the switch device  $E'$ , at the central office and in which one of its keys  $E^{10}$ , is placed. Another key  $M'$  is placed in the circuit M, at the stable and so arranged as by its manipulation to cause signals to be sent over the circuit through the magnets  $M^2$ , and  $M^3$ , and to thereby cause the signals to be sounded on the bells  $M^4$ , and  $M^5$ . The manipulation of the key  $E^{10}$ , will of course also cause similar signals to be given upon the bells  $M^4$ , and  $M^5$ , and in this way signals can be transmitted telegraphically between the central office and the stable in which the bell magnets  $M^3$ , and  $M^2$ , are placed respectively. A telephone apparatus N, is placed in the stable having a branch connection  $N'$ , with the circuit M, and also a ground connection  $N^2$ , through a condenser, or resistance C. By this arrangement oral communication may be had at any time between the central office and the stable providing the suitable switch connection is made through the switch device  $E'$ . The magneto bell mechanisms of the telephone apparatuses F, and N, will answer for "calling up" signals for telephone purposes but they may be omitted and the keys  $E^{10}$ , and  $M'$ , and the bells  $M^4$ , and  $M^5$ , may be also used for "calling up" purposes. The register magnet  $L^2$ , as well as the gong mechanism  $L^5$ , and indicator mechanism  $L^6$ , may be looped into the circuit M, and the multiple transmitter L, likewise placed in circuit and the battery  $L^7$ , be dispensed with, and the whole mechanism be controlled by the single battery  $M^6$ , if so desired as the circuit  $L'$ , is shown as a separate circuit instead of a loop for purposes of clearness. The manner in which this can be done is indicated by the



switches O, O', which are shown as placed each side of the battery L'. It can be seen that by throwing these switches as indicated by the dotted lines that the circuit L', would then become a loop in the circuit M, and the battery L', might be entirely removed and all of the mechanism located at the stable would thus be placed in a single circuit and in direct connection with the central office switch device E'. The complete stable apparatus is understood as comprising the register magnet L', with its mechanism,—the bell L', and the indicator L', the magnet M', with its bell mechanism,—the key M', and the telephone apparatus N.

The operation of the system will now be explained: When a patrolman on his beat comes to the outlying station A, he manipulates the call box mechanism A', within the box A', so as to report to the central office that he has reached the station A, in going around on his beat. The signal thus given by the signal mechanism A', is sounded upon the bell A', in the station A, and also causes the magnet D, to register upon the tape D', the number of the outlying station A, and also the characters indicating the nature of the call and the individual member of the department thus making his report. Attention is also called to the fact that a signal is coming in by the sound of the bell D', which is also actuated by the signal. The circuit closer D', also closes the circuit D', through the magnet H, and the latter actuates the time stamp H', which is connected to the L shaped armature lever H', which carries the armature of the magnet H. The tape D', passes between the presser H', and the time characters of the time stamp device H', and thus causes the time that the signal is received to be imprinted upon the tape D'. A suitable inking device forming a part of the time stamp mechanism H', is arranged between the presser H', and the time characters so as to make the time imprint more legible and which may be either on the upper or under surface of the tape D', as may be desired. The shaft D', carries a wheel D', but which is insulated therefrom which is provided with one tooth D', upon which the contact springs D', and D', rest when the shaft D', is in its normal position. But as soon however as the first break in the circuit B, occurs the tooth D', of the wheel D', leaves contact with one of the springs D', and D', and the circuit D', remains open between these springs notwithstanding the closures made by the circuit closer D', in response to the subsequent breaks in the circuit B, made by the call box mechanism A', in giving its complete signal. In this way the presser H', makes only one imprint upon the tape D', notwithstanding the numerous closures made by the circuit closer D', while the complete signal is being registered upon the tape D'. The armature lever H', controls the movement of the shaft D', by means of the detent D',

which is secured thereon. If the call thus sent in from the station A, be simply a "report" call, the officer on duty in the central office is made aware of it, by the operation of the register mechanism and the time stamp device, as already indicated, and nothing further is necessary on his part but to allow the patrolman to proceed on his beat and turn in another similar "report" call from the next outlying station he comes to, and in this way the regular "report" calls are turned in from any number of stations that may be in the system, and by any number of policemen who are thus on duty. If a patrolman however should desire to hold oral communication with the officer in the central office, he gives the signal upon the call box A', corresponding to such a desire on the part of an officer which is sounded upon the bell D', and recorded upon the tape D', and is so understood by the officer on duty in the central office. The latter then depresses the key E', of the switch device E', which causes the magnet A', to indicate upon its bell A', that he is ready to talk with the officer at the outlying station at the same time he moves the index E', of the switch device E', so as to connect the telephone apparatus F, through the branch B', with the circuit B. The patrolman can then use the telephone apparatus A', and talk to the central office officer through the central office telephone apparatus F, and the latter can likewise talk back through the apparatus F, and the apparatus A', to the patrolman and in this way special instructions or information may be given and received orally between the patrolman and the central officer.

The box A', in the outlying station A, is usually so constructed that a citizen desiring to communicate with the police office can have access to but one of the calls that can be given therefrom, and this is done automatically in a manner similar to that in which the patrolman makes his report call. The officer on duty in the central office signals back through the magnet A', on its bell mechanism the reception of such a signal which the citizen can hear and understand as indicating that a signal has been received and his wish for police assistance, or the like, complied with, using the key E', of the switch device E' to do this. Now if either of the calls from the citizen, or the policeman, would be understood as requiring the use of the patrol wagon, or ambulance, the central officer would give such a signal either automatically, by means of the signal device L, which would indicate upon the indicator L', or the gong L', or the tape of the register mechanism L', the number of the outlying station to which the wagon, or ambulance, was to be brought. If some special instructions were to be given, however, this could be done either telegraphically, by means of the key E', of the switch device E', which would be sounded upon the bell M' at the stable, or else oral communication regarding



the matter could be held by means of the telephone apparatuses F, and N, in the usual manner of telephonic communication. If the attendant at the stable should desire to telegraph back to the central officer, he could do it by manipulating the key M', which would sound its signals upon the bell M<sup>5</sup>, at central office. Now it will be supposed that a patrolman should signal in from another outlying station P, for instance, that he desired the assistance of officers who were patrolling in the neighborhood of station A, he accordingly sends in the appropriate signal upon the mechanism in the box P, which is similar to that described and shown as belonging to station A. The officer on duty at the central office observes such a signal upon the tape D<sup>5</sup>, and accordingly sets the circuit closing device J', so as to give signals over the circuit I, corresponding to the number of the station P, and starts it into operation. The circuit closer J, then makes the appropriate closures of the circuit I, which causes the gas light device I<sup>6</sup>, to flash, or flicker, so as to indicate silently but visually the number of box P, and the officer or officers patrolling in the vicinity of station A, would observe the light signals given by the device I<sup>6</sup>, and would understand that they were wanted immediately at station P, to which they could go direct. This method of police signaling in this connection is novel, and advantageous, as hitherto, the signals usually given at signal stations from police headquarters have only a single meaning which is,—that the officer report at the station A, first, and then receive instructions as to where he is to go. The reason of this, is,—that only signal contrivances that will either cause a colored glass shade to pass in front of the light, or some other signal of a single meaning, has heretofore been ever used, and devised, for this purpose. Now by my system I can give a code of signals of an indefinite number, and great variety, which can be distinguished from each other, and which when observed, or heard, convey some special meaning, or significance, to the patrolman who sees, or hears, them. The advantages of this system are very great, and numerous, and in the illustration shown, its importance can be seen; as the policeman when he sees or hears one of these signals can at once go where his services are required without losing the time incidental to a system in which he would first be obliged to go to the station where the signal was given, and then learn either telegraphically, or orally, what was required of him. Of course it is understood that the switch I<sup>2</sup>, would have to be thrown upon the terminal of the circuit I, so as to establish a complete circuit. It may also be seen that whether the closures of the circuit I, by means of the circuit closer J, operate a bell mechanism, an electric lamp, or a semaphore device, the nature of the signals will be the same as these various devices are referred to, simply for the purpose of illustrating how a

code of signals may be given either visually, or audibly, over the circuit I, by means of the operation of the circuit closer J.

Now the signal sent in from the station P, by the patrolman there might indicate a riot, for instance, and which would call for the assistance of not only the patrolman in the vicinity of station A, and several other similar stations throughout the city, but also the patrol wagon and such officers as would be available at the central office. In this latter case the mechanism at the stable would be manipulated by means of the switch device E', or the multiple signal device L, in the manner already described, and the whole police force so far as it was available, could be quickly concentrated at the station P. In this way the nature and importance of the combination of all of the elements in the system is shown, constituting as it does, the call box mechanism at the outlying station by means of which, the emergency call is given, and the register and time stamp mechanism, in the central office upon which it is received and recorded, the signal circuit I, having the various signal devices therein, by means of which, the other patrolmen are signaled to, that their services are at once required at station P, and the circuit closer J, with its automatic actuating device J', by means of which, the signals are transmitted and repeated in an orderly and regular manner, and the mechanism at the stable comprised in the circuits M, and L', by means of which, the signals may also be given to the stable attendant, and the central office mechanism by means of which, these devices are controlled and actuated. The circuits I<sup>4</sup>, I<sup>5</sup>, I<sup>6</sup>, have signal devices which are not shown, but are to be understood as being similar in construction and operation to those shown in circuit I, and are provided with circuit closers I<sup>10</sup>, I<sup>11</sup>, and I<sup>12</sup>, by means of which, any one of the circuits may be made to operate similar to the operations of the circuit I, by the movements of the circuit closer J. The circuit closers J<sup>5</sup>, J<sup>6</sup>, and J<sup>7</sup>, perform the same functions for the circuits I<sup>4</sup>, I<sup>5</sup>, and I<sup>6</sup>, respectively, that the circuit closer J, performs for the circuit I, and which can be readily understood without further explanation. The object of showing the three extra circuits I<sup>4</sup>, I<sup>5</sup>, and I<sup>6</sup>, which are each supposed to have signal devices like those shown in circuit I, is to show, how outlying stations K, K, K, may be grouped in different circuits which would go through different parts of the city, and so that a system of attracting signals could be divided, by the manipulation of the switches I<sup>2</sup>, I<sup>10</sup>, I<sup>11</sup>, and I<sup>12</sup>, and the signals thus given, limited to the territory in which it was desired to have such signals operate, while at the same time leave some other of the circuits, (or parts of the city) free from the effects of such signals:—in other words give the signals to policemen in some parts of the city, for instance, those near the scene from which the "emergency"



call was given, and leave other of the patrolmen undisturbed by the effects of such an alarm, on account for instance, of the remoteness from which they were from the station to which the rest of their fellow members were called. The stations K, K, K, are each supposed to be equipped with a call box mechanism, signal bell and telephone apparatus, like that shown as belonging to station A. They are supposed to have a signal mechanism similar to those shown as belonging to station A, and which are placed in the signal circuit I. For purposes of clearness, however, the call box circuits corresponding to the circuit B, in which the call box mechanisms are placed, are omitted, but they can be understood as being similar to the circuit B, or for that matter the circuit B, might be extended so as to pass through all of them. I wish it therefore to be understood, when I refer to station A, that taken as a whole, it is a device from which the call box mechanism connects with the central office, by means of the circuit B, and the signal mechanism shown as adapted to be used in the circuit I, is also connected therewith, and by means of the circuit I, with the central office mechanism controlled by the device I', which is located at the central office. In the same way, the mechanism shown as belonging at the station is also, taken as a whole, another element in the system.

The expression "central office" refers to a police head-quarters, and is used more particularly to designate the apparatus located thereat, and with which connections are made, rather than as being an element, or thing itself, in the combinations.

The purpose and operation of the "answer back" mechanism, will now be explained:— Suppose it is desired that the patrolman when he arrives at the outlying station A, in making his rounds, after making his "report" call, shall then remain at the station and put himself in telephonic communication with the officer on duty at the central office, and that it is desired to communicate this information to him automatically, from the central office, upon the station bell mechanism A<sup>6</sup>, immediately after his report signal has been completed. When the central office officer decides to do this, he at once manipulates the switch D', so as to bring the branch B<sup>3</sup>, with its terminal spring D<sup>12</sup>, the circuit wheel D<sup>3</sup>, and the branch wire B<sup>4</sup>, with its terminal spring D<sup>4</sup>, into the main call box circuit B. The effect of this will be that when the circuit wheel D<sup>3</sup>, revolves, (which it does every time a signal is sent in) one of the notches in passing under the spring D<sup>12</sup>, will cause a break in the circuit and consequently cause a single tap to be given upon the bell A<sup>6</sup>, in the signal station. Now this tap will occur immediately after the call box device A<sup>2</sup>, completes its signal, in the manner previously described, and the officer when he makes his "report" call, listens while his "report" sig-

nal is being sounded upon the bell A<sup>6</sup>, and when he hears the additional stroke upon the bell he at once understands that he is expected to report orally to the central office and await special instructions. If the connection of the switch D', be with the branch B<sup>3</sup>, having the spring D<sup>2</sup>, resting upon the wheel D<sup>3</sup>, then two taps will be given upon the bell A<sup>6</sup>, as there are two notches in the wheel D<sup>3</sup>, which pass under the spring D<sup>2</sup>. The significance of either one of these "answer back" taps are of course understood by the patrolman, and he acts accordingly, as for instance, the double tap might be used to denote that he was expected to at once report in person at the central office without waiting for any special instructions from the officer on duty there. This "answer back" service might be varied and increased according to the requirements of the department as can be understood without further explanation. Or again the reception of the "answer back" taps upon the bell A<sup>6</sup>, may also be used to signify that the incoming signals have actuated the office mechanism and been recorded there and the operation of the "answer back" device of itself, would indicate that the mechanism had duly responded to the incoming signal. Another object attained by this "answer back" mechanism is this:—It is customary for the officer at the central office to allow the report signals to come in and register themselves automatically, without any act on his part other than to recognize their reception, but as soon as he decides that the patrolman is to be instructed specially, he at once manipulates the switch D', and then he need pay no further attention to the matter of having the patrolman report for special instructions at the outlying station, knowing as he will, that whenever the patrolman hears the special "answer back" signal, he will report for instructions even though the interval of time between that at which the former manipulated the switch D', and that at which the latter reports, be comparatively great. Hence the commanding officer might temporarily absent himself from the central office, after he had manipulated the switch, and still if the patrolman should report during this absence, he would understand this and remain at the outlying station until he could receive the orders that were intended for him.

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

1. The combination with an outlying signal station provided with a call box mechanism and an attractive signal device a circuit having connection with the call box mechanism a magnet D, of a register mechanism having a connection with the call box circuit and adapted to indicate the signals at a central office that are given by the call box mechanism, and also another circuit having connection with the attractive signal device a circuit closer connected with the attracting sig-



nal circuit adapted to actuate from the central office the attractive signals at the outlying station an automatic device adapted to automatically control the movements of the circuit closer and of other similar circuit closers, other circuit closers having corresponding connections with attractive signal circuits and in which are placed other attractive signal devices at other signal stations in the system all combined substantially as specified.

2. The combination with an outlying signal station provided with an attractive signal device having a circuit connection with a circuit closing device at a central station, and being provided with a call box mechanism, a circuit having a connection with the call box mechanism a magnet D, of a register central office mechanism, an armature mechanism D<sup>8</sup>, adapted to be controlled by the magnet D, and being provided with a circuit closer D<sup>9</sup>, a circuit D<sup>10</sup>, having a connection with the circuit closer D<sup>9</sup>, and a magnet H, in the circuit D<sup>10</sup>, and an armature lever mechanism H<sup>3</sup>, which is actuated by the magnet H, and which is provided with a presser H', and the time stamping device H<sup>2</sup>, against which the presser H', makes impressions substantially as specified.

3. The combination with the circuit B, of the call box mechanism A<sup>2</sup>, and the bell magnet A<sup>4</sup> at the outlying station and the register magnet D, at the central station the armature mechanism D<sup>8</sup>, of the magnet D, provided with the circuit closer D<sup>9</sup>, the circuit D<sup>10</sup>, having a connection with the circuit closer D<sup>9</sup>, and being provided with the terminals D<sup>16</sup>, and D<sup>17</sup>, and the magnet H, of an answer back mechanism, the armature mechanism H<sup>3</sup>, of the magnet H, the shaft D<sup>7</sup>, of an answer back mechanism provided with the detent D<sup>18</sup>, which is controlled in its movement by the armature mechanism H<sup>3</sup>, and which is provided with the insulated circuit wheel D<sup>15</sup>, which is adapted to close the circuit D<sup>10</sup>, between the terminals D<sup>16</sup>, and D<sup>17</sup>, and the shaft D<sup>7</sup>, being also provided with a notched insulated circuit wheel D<sup>3</sup>, the terminals D<sup>2</sup>, and D<sup>12</sup>, which rest upon the circuit wheel D<sup>3</sup>, and which are provided with wire connections B<sup>3</sup>, and B<sup>9</sup> respectively, the switch D', having a connection with the circuit B, and adapted to switch the current over either of the circuits B<sup>3</sup>, or B<sup>9</sup> respectively and a terminal spring D<sup>4</sup>, which also rests upon the wheel D<sup>3</sup>, having the wire connection B<sup>4</sup>, by means of which a loop of the circuit B, may be extended through the circuit wheel D<sup>3</sup>, of the answer back device taken in connection with the wires B<sup>3</sup>, B<sup>9</sup>, and having a switch D<sup>5</sup>, which is adapted to complete the loop with the circuit B, and thereby enable the circuit wheel D<sup>3</sup>, to break the circuit B, and thereby cause signals to be given through the magnet A<sup>4</sup>, upon its bell mechanism at the outlying signal station all in the manner above specified.

4. The combination with the circuit B, hav-

ing a call box mechanism A<sup>2</sup>, and a bell magnet A<sup>4</sup>, therein a loop consisting of the wires B<sup>3</sup>, and B<sup>4</sup>, which is provided with terminals D<sup>2</sup>, and D<sup>4</sup>, and the notched wheel D<sup>3</sup>, of an answer back mechanism and a switch D', by means of which the loop is established through the answer back mechanism substantially as specified.

5. The combination of the following the circuit B, provided with call box mechanism A<sup>2</sup>, and magnet A<sup>4</sup>, of the outlying station and the magnet D, of the central office register mechanism the armature mechanism D<sup>8</sup>, of the magnet D, provided with the circuit closer D<sup>9</sup>, the circuit D<sup>10</sup>, having connection with the circuit closer D<sup>9</sup>, and the magnet H, connected in the circuit D<sup>10</sup>, which is provided with an armature mechanism adapted to actuate a combined time stamping device and answer back mechanism substantially as specified.

6. The combination with a circuit B, having therein a call box mechanism A<sup>2</sup>, of a magnet D, and an armature mechanism D<sup>8</sup>, which is adapted to actuate a combined time stamp and answer back mechanism consisting of the circuit D<sup>10</sup>, the time stamp device H<sup>2</sup>, and the answer back mechanism D<sup>7</sup>, and also the bell mechanism D<sup>6</sup>, substantially as specified.

7. The combination with the circuit B, of the call box mechanism A<sup>2</sup>, and the bell magnet A<sup>4</sup>, and the telephone apparatus A<sup>5</sup>, connected by means of a branch wire B<sup>2</sup>, all at the outlying station the register magnet D, provided with the armature mechanism D<sup>8</sup>, adapted to record signals given by the call box mechanism A<sup>2</sup>, upon a tape D<sup>5</sup>, and also sound signals upon a bell mechanism D<sup>6</sup>, a switch device E', provided with a key mechanism E, E<sup>2</sup>, E<sup>4</sup>, having wire connections B<sup>5</sup>, B<sup>6</sup>, B<sup>7</sup>, with the circuit B, and being also provided with a circuit closer E<sup>5</sup>, adapted to make connection with the terminal E, of the key mechanism, and the branch wire B<sup>8</sup>, having a connection with the circuit closer E<sup>5</sup>, and in which is placed the telephone apparatus F, all substantially as specified.

8. The combination with the circuit B, of a call box mechanism A<sup>2</sup>, and bell magnet A<sup>4</sup>, of an outlying signal station A, a magnet D, adapted to indicate the signals of the call box mechanism A<sup>2</sup>, a switch device E', in circuit connection with the circuit B, provided with key mechanism E, E<sup>2</sup>, E<sup>4</sup>, so constructed that the closing of the circuit between the terminals E, E<sup>4</sup>, is effected before the contact between the terminals E, E<sup>2</sup>, is opened and thereby adapted to open the circuit B, at the outlying station and cause signals to be given through the bell magnet A<sup>4</sup>, while the circuit is kept closed through the magnet D, and thereby preventing the operation of the armature mechanism D<sup>8</sup>, substantially as specified.

9. The combination of the circuit B, provided with a call box mechanism A<sup>2</sup>, and bell



magnet A<sup>4</sup>, at an outlying signal station, and a magnet D, adapted to actuate a register mechanism at a central office a switch device E', provided with key mechanism E<sup>3</sup>, adapted to give signals upon the bell magnet A<sup>4</sup>, at the outlying station and being also provided with a key mechanism E<sup>19</sup>, a circuit M, having connection with the key mechanism E<sup>19</sup>, of the switch device E', and a bell magnet M<sup>2</sup>, of a stable apparatus in the circuit M', that is adapted to give signals upon a bell M<sup>4</sup>, whenever the key mechanism E<sup>19</sup> of the switch device E', is manipulated substantially as specified.

10. The combination of the following elements; the circuit B, having therein a call box mechanism A<sup>2</sup>, at an outlying station the register magnet D, of a central office register mechanism a switch device E', provided with key mechanisms having a circuit breaking connection with a circuit consisting of a section M, and the loop L', and the circuit consisting of the section M, and the loop L', containing therein the bell magnet M<sup>3</sup>, and the multiple transmitter L, at the central office and the register magnet L<sup>2</sup>, the key M', the bell magnet M<sup>2</sup>, and the gong L<sup>5</sup>, and indicator L<sup>6</sup>, at the stable all combined substantially as specified.

11. The combination of the following elements; a circuit B, provided with a call box

A<sup>2</sup>, at an outlying station and a register magnet D, at the central station a switch device E', provided with key mechanisms and a circuit M, L', having connection with the switch device E', a magnet L<sup>2</sup>, and an automatic multiple transmitter L, in circuit connection with the switch device E', through the circuit L', M, all combined substantially as specified.

12. The combination of the following elements; an outlying signal station A, provided with an attractive signal device having a circuit connection with an actuating circuit closer J, at a central office and being also provided with a call box mechanism having a circuit connection with a register mechanism D, at the central office a switch device E', having connection with the call box circuit a circuit M, L', also having a connection with the switch device E', and a stable mechanism consisting of the register mechanism L<sup>2</sup>, the gong L<sup>5</sup>, and indicator L<sup>6</sup>, and the multiple automatic transmitter L, arranged at the central office in circuit connection with the register magnet L<sup>2</sup>, the gong L<sup>5</sup>, and indicator L<sup>6</sup>, constituting the stable apparatus all combined substantially as specified.

THOMAS F. GAYNOR.

Witnesses:

WILLIAM A. FITZGERALD,  
JOHN E. FITZGERALD.