

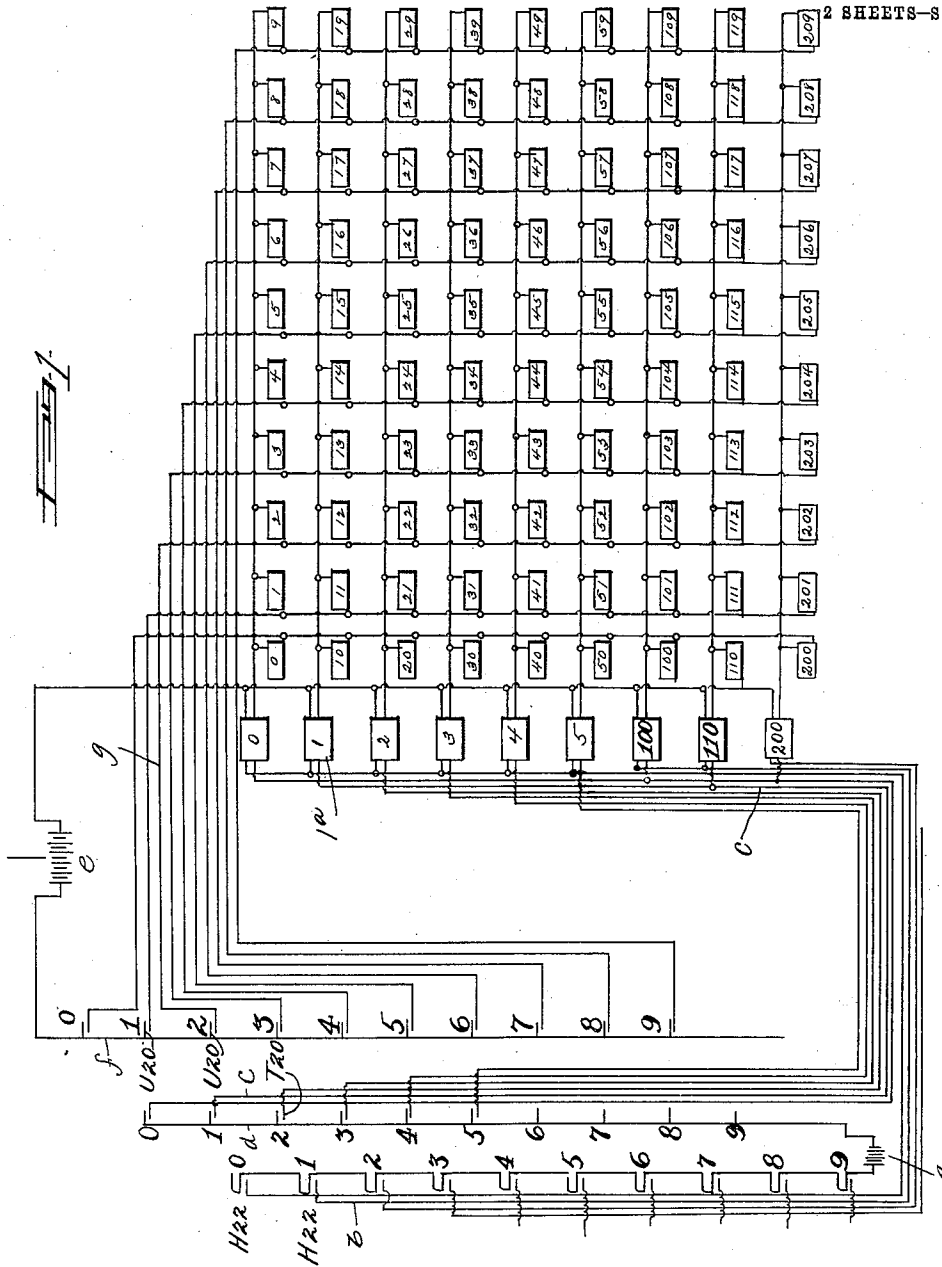
N. H. MORRISON.
SYSTEM AND APPARATUS FOR ELECTRICALLY SELECTING AND CONTROLLING A NUMBER OF
ELEMENTS FROM A DISTANT POINT.

1,086,072.

APPLICATION FILED APR. 16, 1912.

Patented Feb. 3, 1914.

2 SHEETS—SHEET 1.



Inventor

Nathan H. Morrison

Witnesses

J. K. Lytle
E. L. Schmidt

By *Shepherd & Campbell*

Attorneys

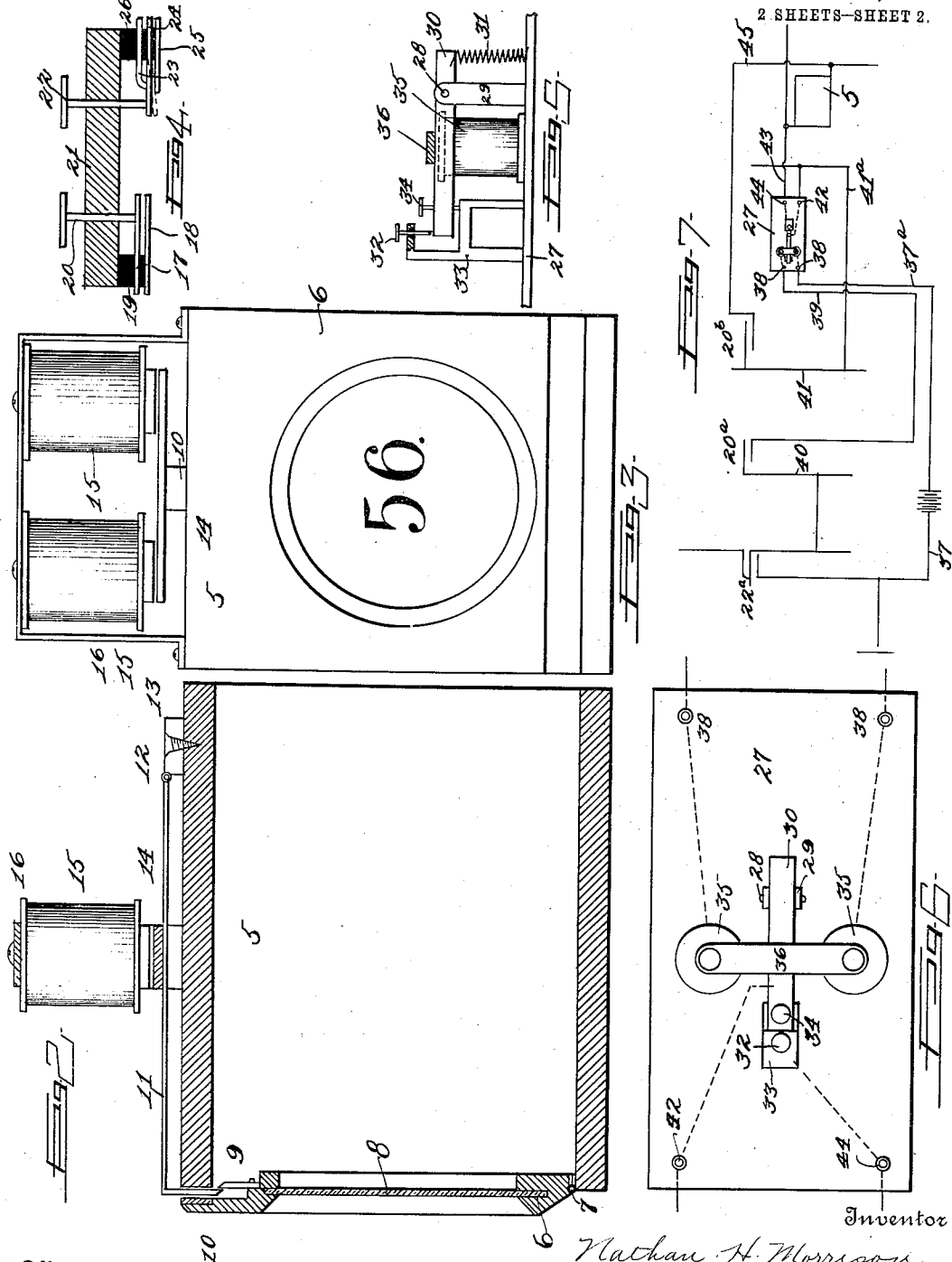
N. H. MORRISON.
 SYSTEM AND APPARATUS FOR ELECTRICALLY SELECTING AND CONTROLLING A NUMBER OF
 ELEMENTS FROM A DISTANT POINT.

APPLICATION FILED APR. 16, 1912.

1,086,072.

Patented Feb. 3, 1914.

2 SHEETS-SHEET 2.



Witnesses
J. N. Lyles
C. L. Schmidt

Nathan H. Morrison

By J. Shepherd Campbell

Attorneys

UNITED STATES PATENT OFFICE.

NATHAN H. MORRISON, OF MEREDITH, NEW HAMPSHIRE.

SYSTEM AND APPARATUS FOR ELECTRICALLY SELECTING AND CONTROLLING A
NUMBER OF ELEMENTS FROM A DISTANT POINT.

1,086,072.

Specification of Letters Patent.

Patented Feb. 3, 1914.

Application filed April 16, 1912. Serial No. 691,215.

To all whom it may concern:

Be it known that I, NATHAN H. MORRISON, a citizen of the United States of America, residing at Meredith, in the county of Belknap and State of New Hampshire, have invented certain new and useful Improvements in Systems and Apparatus for Electrically Selecting and Controlling a Number of Elements from a Distant Point, of which the following is a specification:

This invention relates to a system and apparatus for electrically selecting and controlling a number of elements from a distant point. This system and apparatus are particularly adapted for use in the controlling of the individual letter boxes in postoffices, this system rendering it possible for a clerk to unlock any box from his desk and without getting up from the desk. It is to be understood, however, that the invention is capable of use in other relations, as hereinafter set forth.

In the accompanying drawing, Figure 1 is a diagrammatic view illustrating a system of wiring, adapted for use in connection with the system. Fig. 2 is a sectional view of one of the boxes. Fig. 3 is a front elevation of the box shown in Fig. 2. Fig. 4 is a detailed view of switches hereinafter described. Fig. 5 is a detailed view of a relay. Fig. 6 is a plan view of the relay, and Fig. 7 is a diagrammatic view illustrating the relation of the relays to one of the boxes.

Like numerals designate corresponding parts in all of the figures of the drawing.

Referring to the drawing, the numeral 5 designates a letter box, of the pigeon hole type, such as are ordinarily employed as individual lock boxes in postoffices, said box being open at its rear end to facilitate the ready insertion of mail by the mail clerk, and the front end of the box being normally closed by a door 6 that is hinged at 7 to the box. The door is provided with the usual glass front 8 and carries a beveled locking plate 9, adapted to coact with the beveled end of a down turned tongue 10 upon a locking bar 11. This locking bar is hingedly connected at 12 to a block or other support 13. The bar 11 carries an armature 14 adapted to be attracted by magnets 15, said magnets being supported by a yoke 16 upon the top of the box 5. It is apparent that the major portion of the weight of the

door 6 lies outside of its point of hinging 7, consequently when the magnets 15 are energized and lift the locking bar 11, the door 6 is permitted to fall downwardly and outwardly, rendering access to the interior of the box possible. When the door is closed, the bevel end of latch plate 9 coacts with the beveled end of the down turned tongue 10, and snaps into the position illustrated in Fig. 2.

In the present invention, single and double contact switches, illustrated in Fig. 4, are employed. The single contact switches comprise plates 17 and 18, normally held separated by a block of insulating material 19, but the upper plate is adapted to be brought into contact with the lower plate when a key 20 is depressed, this key being supported in a bar 21. Key 22 likewise supported in bar 21 controls the three point switch illustrated in Fig. 4. This switch comprises plates 23, 24 and 25, said plates being separated by a block of insulating material 26. The plates 23 and 24 are under normal conditions, in contact with each other, but when the key 22 is depressed, plate 24 is moved out of contact with plate 23, and into contact with plate 25. The relay shown in Figs. 5 and 6 comprises a supporting base 27. Pivotaly mounted at 28 upon a supporting standard 29 is a relay arm 30. A tension spring 31 normally tends to elevate the front end of the arm 30, and to hold said arm into engagement with an insulated screw 32. This screw is mounted in a yoke 33.

34 is a screw passing through relay arm 30.

It will be seen, that arm 30 is held in engagement with screw 32, but when magnets 35 are energized, they attract an armature bar 36 carried by the relay arm 30, and draw said relay arm down against the tension of spring 31, this action causing screw 34 to contact with the yoke 33.

The diagrammatic view shown in Fig. 7 outlines the wiring of one of the relays, and one of the boxes. The circuit for the relay begins at one of the double contact switches 22^a, through conductors 37, 37^a, to one of the binding posts 38 of the relay and through conductor 39 from the other binding post 38 to one of the single contact switches 20^a, thence through conductor 40 back to switch 22^a. The circuit to the box is completed by closing switch 20^b, conductors 41, 41^a lead-

ing from this switch to one of the binding posts 42 of the relay, and another conductor 43 leading from the complemental binding post 44 of the relay to the box. The circuit is completed through a conductor 45. It is apparent that the closing of switch 20^b will not complete a circuit through box 5 unless switches 22^a and 20^a have been closed, the closing of these switches energizing the magnets 35 and closing the circuit between binding posts 42 and 44, thereby rendering it possible when switch 20^b is closed to complete the circuit through box 5. It is to be understood that the binding posts 38 are the binding posts for the windings of the magnets 35, while binding posts 42 and 44 are connected respectively to relay bar 30 and yoke 33.

Referring now more particularly to Fig. 1, keys H²² are double contact switches, corresponding to switches 22, and may be termed "master" switches, each of these switches controlling a series of one hundred boxes. U²⁰ are unit switches corresponding to the switches 20 and the switches U²⁰ are arranged in series with the switches H²². T²⁰ are tens switches of the single contact type, and these switches control the box circuits while the switches U²⁰ and H²⁰ control the relay circuits. The keys of the various switches are numbered from naught to nine, and it is thought that the operation will be clear from the description given, with relation to Fig. 7. However, it may be said that the operation is as follows:—If the holder of a box comes to the window and asks for box 112, the operator at his desk presses key one in the hundreds row, key one in the tens row and key two in the units row. Key one of the hundreds row and key one of the tens row are connected in series and control the relay marked 110, and this relay controls the row of boxes to the right thereof so that when the operator in addition presses key two in the units row, box 112 will be unlocked. The double contact switches H²² have their uppermost plates in contact normally so that the circuit can be properly completed through them. It is apparent, however, that if the keys of any of these switches H²² are depressed, all of the lower numbers will be cut out. That is, if the key of switch H²² number 7 is pressed to bring the lower contact plates together, it follows that the circuit through keys, naught, 1, 2, 3, 4, 5 and 6 is cut out and the current passes directly through 7. To make clear the operation of the device and still keep the drawing within reasonable limits, certain of the boxes have been omitted. These boxes shown in Fig. 1 are numbered from naught to fifty-nine, from one-hundred to one-hundred and nineteen and from two-hundred to two-hundred and nine, and it will be seen that the zero

key H²² controls the relays marked 1, 2, 3, 4, 5 and 6, while key one of the hundreds keys, H²², controls the relays 100, 110 and key 2 of the hundreds keys, H²² controls the relay marked 200. The relays controlled by the hundreds keys 3, 4, 5, 6, 7, 8 and 9 are omitted. In opening box 112, as hereinbefore set forth, the completion of the circuit is as follows: from battery A through the various normally closed hundreds switches and manually closed hundreds switch or key 1 to the hundreds circuit B, through said hundreds circuit *b* to relay 110. The opposite side of this relay is connected to a tens circuit *c*, which leads up to the tens switch 1. The circuit is completed through this tens switch to a conductor *d*, back to battery *a*, from which it will be seen that the closing of the hundreds switch 1, and the tens switch 1 energizes relay 110. If now the units switch 2 be closed, the circuit is completed through a battery *e*, conductor *f*, through said switch to conductor *g* to box 112, thence through conductor *b* to relay 110 and from relay 110 through conductor *i* back to battery *e*.

While the elements shown and described are well adapted to serve the purposes for which they are intended, it is to be understood that the invention is not limited to the precise construction set forth, but includes within its purview, such changes as may be made within the scope of the appended claims.

Having described my invention, what I claim is:—

1. In a system of the character described, the combination with a source of electrical energy, of a common conductor leading from one side of said source, a plurality of units conductors, a plurality of switches, each connecting a units conductor with said common conductor, a plurality of electrically controlled elements connected with each units conductor, said elements being divided into groups, each group comprising one element connected with each units conductor, a common conductor for each group leading to the other side of the source of electrical energy, a switch in each of the last named common conductors, a magnet controlling each of said switches, a second source of electrical energy, a third common conductor which leads from one side of said second source, a plurality of tens conductors, each leading to one terminal of a different one of the first ten magnets and to every tenth magnet thereafter, a plurality of switches each connecting one tens conductor to the third common conductor, and a connection from the other terminals of said magnets to the other side of the last named source.

2. In a system of the character described, the combination with a source of electrical energy, of a common conductor leading from

one side of said source, a plurality of units
conductors, a plurality of switches, each
connecting a units conductor with said com-
mon conductor, a plurality of electrically
5 controlled elements connected with each
units conductor, said elements being divided
into groups, each group comprising one ele-
ment connected with each units conductor,
a common conductor for each group leading
19 to the other side of the source of electrical
energy, a switch in each of the last named
common conductors, a magnet controlling
each of said switches, a second source of
electrical energy, a third common conductor
15 which leads from one side of said source, a
plurality of tens conductors each leading to
one terminal of a different one of the first

ten magnets and to every tenth magnet
thereafter, a plurality of switches each con-
necting one tens conductor to the third com- 20
mon conductor, a fourth common conductor
leading from the other side of said second
source of electrical energy, a plurality of
hundreds conductors each leading to the
other terminals of ten successive magnets, 25
and a plurality of switches each connecting
one hundreds conductor to the fourth com-
mon conductor.

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

NATHAN H. MORRISON.

Witnesses:

ISABEL L. MORRILL,
SIMEON M. ESTER.
