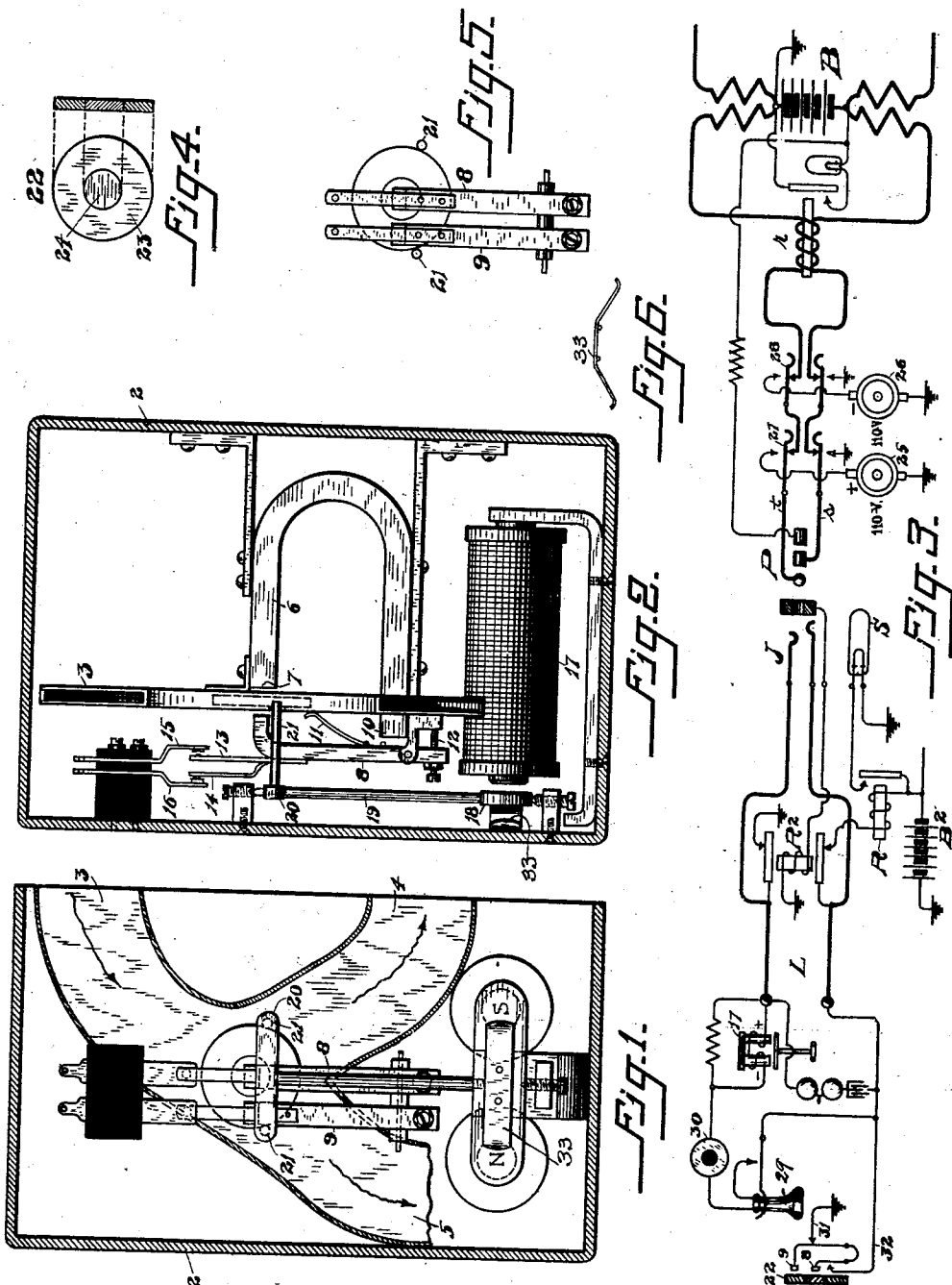


K. B. MILLER.
CHECK CONTROLLED DEVICE.
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Witnesses.

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UNITED STATES PATENT OFFICE.

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CHECK-CONTROLLED DEVICE.

No. 912,397.

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To all whom it may concern:

Be it known that I, KEMPSTER B. MILLER, a citizen of the United States, residing in Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Check-Controlled Devices, of which the following is a specification.

My invention relates to check-controlled devices and has for its object, generally speaking, the provision of means for preventing the fraudulent or undesired operation of such apparatus. Heretofore such devices have been operated by coins or by metal checks and various methods have been devised for preventing the use of unauthorized coins or the like but with only limited success. My invention contemplates the use of a special check and a suitably-arranged receiving apparatus or collector therefor, whereby only checks of the special type are capable of operating the said apparatus. In the preferred arrangement the check consists of a metal disk of which the outer ring consists of non-magnetic material and the central part of the disk of metal that is magnetic. The chute into which the check is dropped to operate the apparatus leads between the pole of a preferably permanent magnet and a pair of armatures disposed, one toward the edge of the slot or chute and the other near the center line thereof, and which are normally unattached by the said pole, the adjustment being such that when a check of magnetic metal is placed between the armatures and the said pole the armatures will be attracted but when a non-magnetic check is placed therebetween no such attraction takes place. These armatures are arranged to control circuit contacts in such manner that under normal conditions or when both are attracted the circuit is open but when only the armature standing in the line of the center of the chute is attracted the said circuit is closed. When therefore, a coin or a disk composed wholly of magnetic material is dropped into the slot the said circuit is not closed but when a check having a non-magnetic outer ring and a magnetic center is placed in the slot the outer armature remains unattracted and the center one is attracted to thereby close the said circuit to operate the desired signal or other device.

The invention is illustrated in the accompanying drawing, in which the same refer-

ence characters are used throughout the several views to indicate like parts and in which:

Figure 1 is a face view of the receiving apparatus or collector with parts removed to show the apparatus within the casing or box; Fig. 2 is a side view of the same; Fig. 3 is a diagram of the circuit in which the said device may be employed; Fig. 4 is a detail view of the preferred form of check, and Fig. 5 is a detail view of the check and circuit-controlling armatures. Fig. 6 is a spring for holding the armature of the polarized magnet midway between the poles.

The collector consists of a suitable casing 2 within which the operating parts of the instrument are located and which include a chute 3 in which the check is adapted to be placed to operate the instrument. This chute divides into two branches; one, 4, leading to the outside of the box to return the check to the party depositing the same, and the other, 5, leading to the receptacle for the checks when they are to be collected in the instrument. At the rear of the chute 3 a permanent magnet 6 is suitably supported with its pole 7 standing adjacent the rear face of the slot above the two branches 4 and 5. A pair of armatures, 8 and 9, are suitably pivoted at the end of the other leg 10 of the permanent magnet which projects between the two branches 4 and 5 of the chute and the upper ends of which armatures are bent toward the outer face of the chute 3 and stand opposite the pole 7 of the permanent magnet. Suitable springs 11 maintain said armatures 8 and 9 in their normal position and adjusting screws 12 are provided in their lower ends to act as normal stops for the same. The free ends of these armatures 8 and 9 are at such a distance from the pole 7 of the permanent magnet and are so adjusted that they are normally unattracted by said magnet but when the air gap between their ends and the pole 7 is shortened, as by the insertion of a magnetic metal disk in the slot 3, they are attracted. The armature 8, as indicated in Figs. 1 and 5, is located at the center line of the slot 3 while the armature 9 is placed at one side of the same. These armatures 8 and 9 carry contacts 13 and 14, the former being arranged when the armature is attracted to engage the stationary contact 15 while the latter is normally in engagement with the stationary contact 16,

these stationary contacts being provided with suitable terminals at their upper ends to be readily connected with the conductors of the desired circuit. The armatures 8 and 9 are in electrical contact through the medium of their common pivot and support.

In the lower part of the collector a polarized magnet 17 is located which controls through its armature 18 a shaft 19 carrying at its upper end a yoke 20 provided with a pin 21 at each end, which pins project through suitable slots into the check chute 3 as indicated in Fig. 2. These pins are held in their normal position by the spring 33, the ends of which press upon the frame 2, and the central portion of which is attached to armature 18 and are at the proper distance apart to receive and support between them the check 22; this check is preferably in the form of a disk as indicated in Fig. 4, the outer ring 23 of which consists of non-magnetic material such as brass and the central part 24 consists of magnetic material such as soft iron. When a check of this character is placed in the chute 3 it rolls down the same and is arrested and held by the said pins 21 with its central part 24 between the armature 8 and the pole 7 of the permanent magnet. The non-magnetic part 23 of the check is between the armature 9 and the said pole. Under these conditions only the armature 8 will be attracted, the armature 9 remaining in its normal position. The circuit which includes the said two contacts 15 and 16 is therefore closed and serves to operate the signal or other desired device. The magnet 17 is under the control of the party having charge of the device and by passing a current in one direction or the other through the said magnet one or the other pin 21 is withdrawn from the chute and the check is caused to pass out either the branch 4 or the branch 5, according to whether it is desired to return the check to the depositor or to collect it in the box.

In Fig. 3 a telephone circuit is shown in which the said apparatus may be employed, L indicating a telephone line leading from a substation to a central office where it is provided with the usual line relay R, cut-off relay R² and line signal S, as well as with a spring jack or other connection terminal J. The cord circuit at the central office, by means of which the operator is enabled to establish connections with the telephone lines, is indicated in part and is provided with the usual answering plug P and the battery B, which may be the same as the battery B² shown in connection with the telephone line, and suitable direct current generators 25 and 26 which are arranged to be connected by suitable keys or switches 27 and 28 with the cord circuit and to send current in one direction or the other over the telephone line. A differential relay r is pro-

vided with superimposed windings and is arranged with its two coils in the opposite strands of the cord circuit and controls a suitable signal so that when an excess current flows through one side of said coil said relay is operated but when current flows over the metallic circuit the effects thereof are neutralized and its armature remains unattracted. In the operation of the apparatus in connection with this system of Fig. 3 the subscriber or any person desiring to use the telephone, takes up his receiver 29 and completes a path for current over the telephone line from the battery B² through the line relay R, thence through the receiver 29 and transmitter 30 at the substation, and back to the central office to ground through the other spring of the cut-off relay R². Current in this path excites the line relay R which closes the local circuit of the line signal S to indicate the call. The operator upon observing this signal inserts the plug P of her cord circuit into the jack J of the telephone line and connects her head telephone (not shown) with the cord circuit to receive the order from the party calling. Upon being informed of the number wanted she requests the deposit of the check. In case a check of the type described is dropped into the chute 3 of the collector the circuit is completed from the ground branch 31 at the substation through armatures 9 and 8 and thence by way of branch 32 to the sleeve side of the telephone line and thence over said sleeve side of the line, the sleeve conductor s of the cord circuit through one winding of the relay r to the live pole of the battery B. This completes a circuit, owing to the ground at the other terminal of the said battery, and causes said relay r to be operated to light its signal thus indicating to the operator that the proper check has been deposited. Upon finally completing the connection the operator actuates the key 27 or 28, according to the manner in which the magnet 17 is connected in the circuit at the substation, and suitably operates the same to turn its shaft 19 and withdraw the pin 21 from the chute 3 on the side toward the branch 5, thereby permitting the check to drop down branch 5 to the check receptacle. As soon as the check passes from the pins 21 the ground branch from the sleeve side of the line through conductors 31 and 32 is opened and the conversation may be carried on in the usual manner. Had the operator been unable to complete the connection, or if for any reason she wished to return the check, the pressure of the other key 27 or 28 would result in sending current in the other direction through the magnet 17 to withdraw the pin 21 on the side toward the branch 4 of the chute to permit said check to be returned to the party calling. It is obvious that the proper check must be presented for the reason that a

check of diamagnetic material would not close the ground circuit and operate the signal at the central office and likewise a check wholly of magnetic material would attract
 5 both armatures 8 and 9 and therefore maintain the circuit open so that the said operator's signal would not be excited. Thus only the proper check can be used. The check is preferably plated with nickel or otherwise to
 10 conceal the different kinds of metal used therein.

While I have thus particularly described one form of the invention, it will be understood that it is not to be limited in all respects to the details thus specifically explained as various changes and modifications may be made therein and still come within its scope and principle.

What I claim is:

20 1. In a check-controlled device, the combination with a permanent magnet, of a check adapted to be placed in the magnetic circuit of said permanent magnet, portions of said check being of different magnetic conductivity, a signaling circuit, means for controlling said circuit, the proper actuation of said means depending upon the proper distribution of the materials of said check,
 25 substantially as described.

30 2. In a check-controlled device, the combination with a magnetic circuit, of a check adapted to be placed in the circuit, portions of said check being of different magnetic conductivity, mechanism controlled by the insertion of said check, the proper actuation of said mechanism depending upon the proper distribution of the materials of said check,
 35 substantially as described.

40 3. In a check-controlled device, the combination with a permanent magnet, of a pair of movable armatures for said magnet, a check adapted to be placed in the magnetic circuit of said permanent magnet and its armatures, said check having portions of
 45 different magnetic conductivity, a portion of good magnetic conductivity being adapted to be placed adjacent one of said armatures, and a portion of poor magnetic conductivity being adapted to be placed adjacent the other
 50 of said armatures, whereby the former armature is actuated and the latter is not actuated for the proper operation of the device, substantially as described.

55 4. In a check-controlled device, the combination with a signaling circuit, of a pair of armatures controlling contacts of said circuit, a magnetic check adapted to be placed in the magnetic circuit of said armatures, said check having portions of different magnetic conductivity adjacent the different
 60 armatures, the proper actuation of said armatures depending upon the magnetic conductivity of the different portions of said check, substantially as described.

65 5. In a check controlled device, the com-

bination with a magnetic circuit, of operative mechanism for the device, checks for controlling said device, different portions of which have different magnetic permeability, substantially as described.

6. A check for check-controlled apparatus having a magnetic and a non-magnetic portion so distributed as to properly control said apparatus, substantially as described.

7. The combination with a check controlled device, of a check composed partially of magnetic and partially of non-magnetic material and adapted to be inserted in the device, the proper actuation of the device being accomplished only by the insertion of the check having properly distributed magnetic and non-magnetic materials, substantially as described.

8. In a check controlled device, the combination with an inclosing case having an opening therein for the insertion of a check, a chute leading from said opening, a division in said chute, means at said division for retaining the inserted check, a magnetic circuit adapted to be closed by a check of magnetic material so retained, means operated by the closing of said magnetic circuit, electrical contacts controlled by said means and means for releasing said check into either of the said divisions of said chute, substantially as described.

9. In a check-controlled device, the combination with an electric circuit, of a pair of armatures controlling said circuit, one of said armatures controlling normally closed contacts of the other normally open contacts in said circuit, whereby the circuit may be completed only by the actuation of the armature controlling normally open contacts in the circuit, and whereby the actuation of the other armature or of both armatures simultaneously does not complete said circuit, a check adapted to be inserted in the magnetic circuit of said armatures, said check having a magnetic portion adjacent the armature controlling the normally open contacts of the electric circuit and having a non-magnetic portion adjacent the armature controlling the normally closed contacts of said electric circuit, the insertion of said check being adapted to actuate the armature controlling the normally open contacts in the electric circuit, whereby the electric circuit is completed, the insertion of any other check being adapted to either improperly actuate said armatures or to fail to actuate them, whereby the electric circuit is not completed, substantially as described.

Signed by me at Chicago, county of Cook and State of Illinois in the presence of two witnesses.

KEMPSTER B. MILLER.

Witnesses:

DAVID S. HULFISH,
 J. M. HUNUSTON.