

No. 854,164.

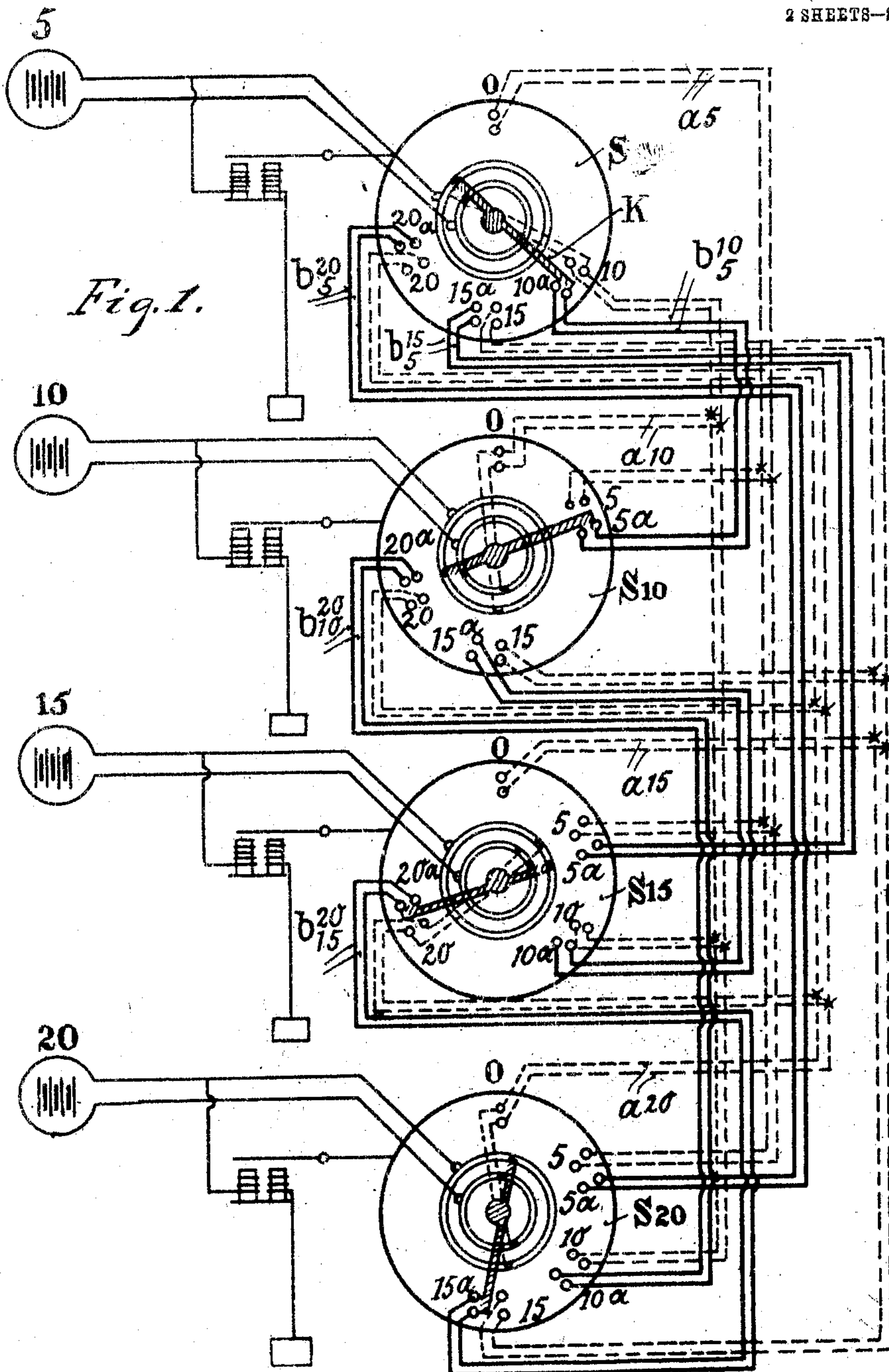
PATENTED MAY 21, 1907.

P. HILDEBRAND.

AUTOMATIC SWITCH FOR TELEPHONE INSTALLATIONS.

APPLICATION FILED AUG. 24, 1905.

2 SHEETS—SHEET 1



Witnesses
a J. H. Addams
a H. H. Hawley

Inventor
Paul Hildebrand,
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Fig. 2.

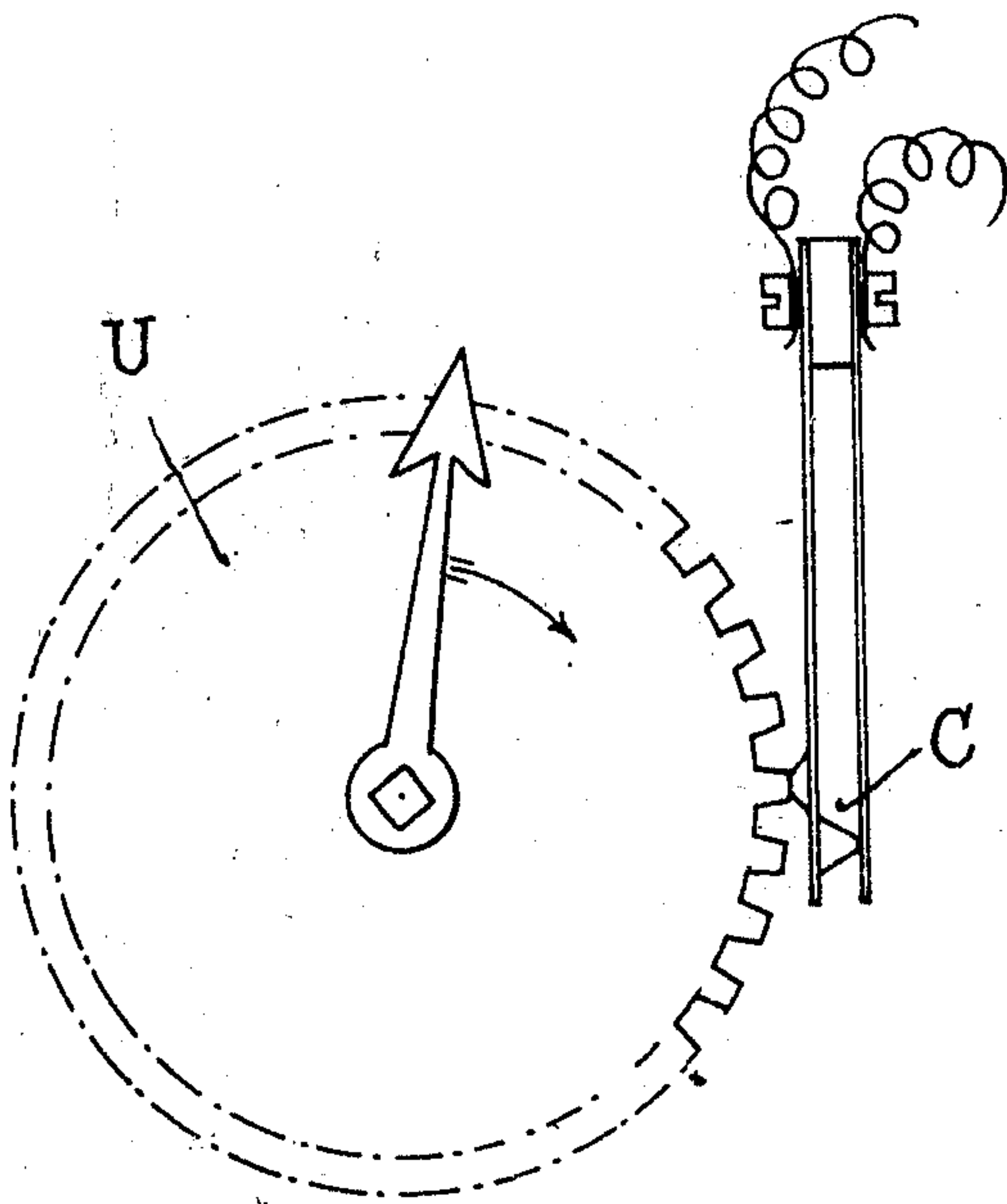
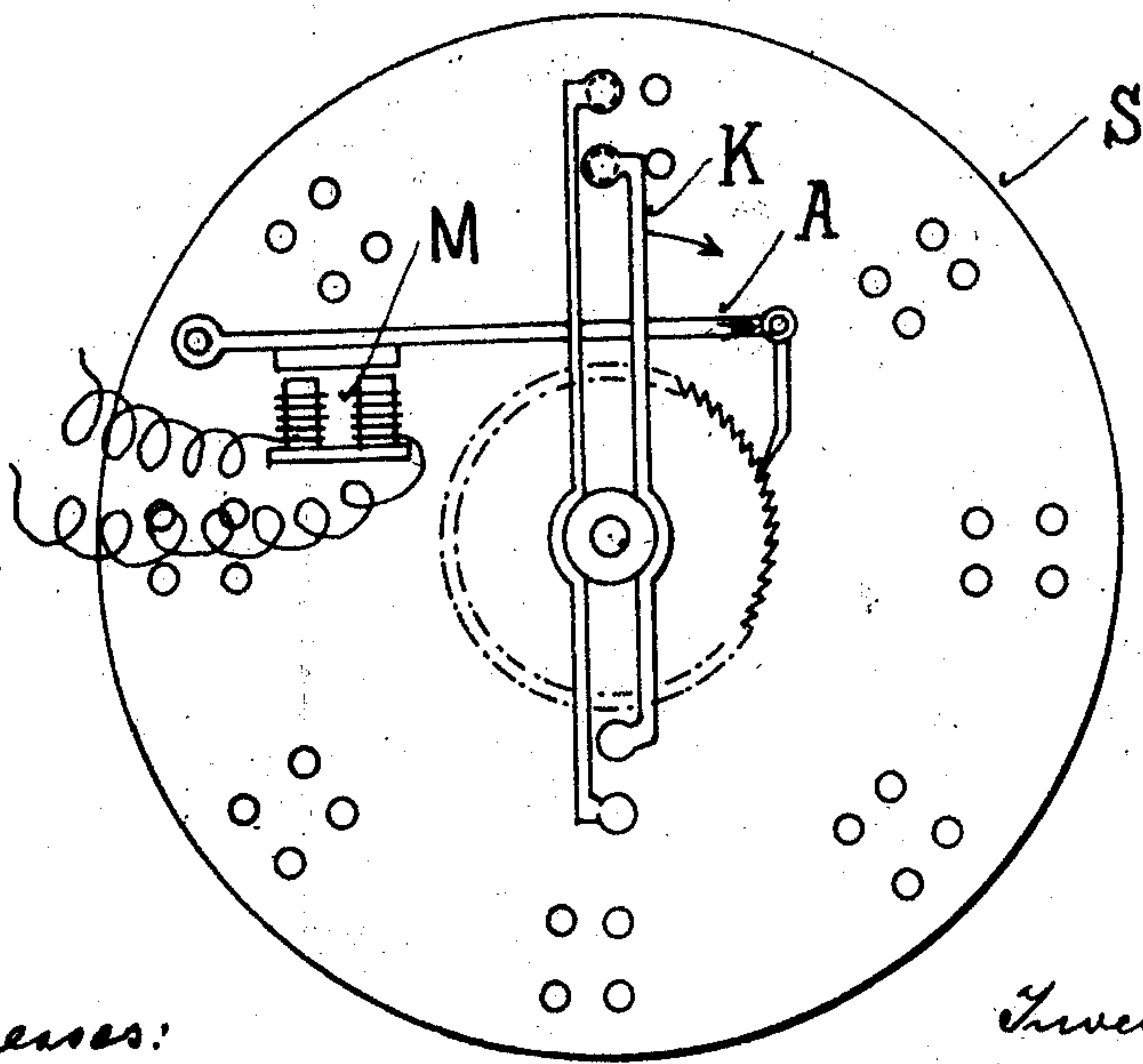


Fig. 3.



Witnesses:

Carl Muehlberg
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UNITED STATES PATENT OFFICE.

PAUL HILDEBRAND, OF MUNICH, GERMANY.

AUTOMATIC SWITCH FOR TELEPHONE INSTALLATIONS.

No. 854,164.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed August 24, 1905. Serial No. 275,654.

To all whom it may concern:

Be it known that I, PAUL HILDEBRAND, a subject of the German Emperor, residing at Munich, Bavaria, Germany, have invented certain new and useful Improvements in Automatic Switches for Telephone Installations, of which the following is a specification.

The present invention relates to an automatic switch for telephone installations allowing each subscriber with a single wire (transmitting and receiving wire) to become connected with any other desired subscriber of the system without calling up the exchange. This result is obtained by means of an automatic switch disk for each subscriber located at the exchange by means of which the subscriber to be called is made acquainted with the number of the caller, the subscriber called then adjusting his switch to this number, whereupon the conversation can take place.

The improvements are diagrammatically represented in the annexed drawing, Figure 1 showing the system, and Figs. 2 & 3, the dial and switch disk mechanism, respectively.

Sheet 2 shows the construction of the subscriber's switch-dial for moving the contact-lever K on the switch-disk S at the exchange. This mechanism consists of a toothed disk U capable of being rotated, whose teeth cause the contact device C to make contact, thereby exciting the magnet M of the switch-disk S, which magnet attracts a lever with pawl A and thus causes the contact-lever K to revolve, exactly in proportion to the revolution of the switch-disk U.

Each switch at the exchange is provided with two zero or rest contacts or stops O one for the transmitting wire and the other for the receiving wire and further for each subscriber a series of contacts arranged in pairs, as shown in the drawing on the different disks by the numerals 10, 10^a, 15, 15^a, 20, 20^a. It will be seen from the diagram that each zero point of a disk is connected by the wires *a*⁵ *a*¹⁰ *a*¹⁵ *a*²⁰ shown in dotted lines, to the call contacts of the other disks having the same numbers for example wire *a*⁵ to the contacts 5 on the disks S¹⁰ S¹⁵, S²⁰ and so on or *a*¹⁰ to 10 on S⁵, S¹⁵, S²⁰ and so on. On the other hand the speaking contacts having the index reference *a* are connected in pairs to each other by the wires *b*¹⁰₅ *b*¹⁵₅ *b*²⁰₅ shown in full lines in such a manner that for example

on the disk S⁵ the contacts 10^a are connected to the contacts 5^a of the disk S¹⁰ and the contacts 15^a to the contacts 5^a of the disk S¹⁵, and so on.

A single switch dial is arranged at each instrument or speaking station said dials being provided with the same numbers as the switch disks in the exchange and arranged in such a manner that by adjusting or displacing a pointer from the zero point to the desired telephone number a similar number of current-impulses is automatically produced in the known manner said impulses being adapted to correspondingly adjust a contact lever K on the disk in the exchange station by means of an electro magnet and a suitable mechanism.

The action on making a call is as follows: If for instance subscriber 5 desires to be connected to subscriber 10, the former first adjusts the pointer of his contact dial from zero to the number 10, whereby at the exchange the contact lever of the disk S⁵ belonging to subscriber 5 is brought against the contacts 10. Since the contact lever on the disk S¹⁰, belonging to subscriber 10, is at zero, there is established the connection with the zero points of the disk S¹⁰ and with subscriber 10 by the contact arm of disk S¹⁰ by which an alarm bell is rung for each subscriber. The subscriber called first asks the number of the caller (in this case 5) and by means of the pointer on his dial brings the contact lever of his disk S¹⁰ at the exchange on the *a* contacts (speaking contacts) of the caller (thus on 5^a). In the meantime the caller by displacing the pointer of his dial from the point 10 (call contact) to 10^a (speaking contact) has brought the contact lever of his disk S⁵ onto the contacts 10^a and, as will be seen from the drawing the desired connection of the disk S⁵ to S¹⁰ is produced. In a similar manner the subscribers 15 and 20 may also be connected.

The special advantage of the improved switch resides in the fact that by the arrangement of the *a* contacts any interruption by a third party during the conversation is completely prevented since for the purpose of calling the desired subscriber the contact lever K of the latter's disk at the exchange must be at zero.

If the wire is engaged the alarm bell does not ring on calling since the contact lever on the caller's disk at the exchange is not at the zero point thus showing the caller that another connection exists.

What I claim is:

In an automatic switch for telephonic installations with a single transmitting and receiving wire the combination of a switch dial
5 at the speaking station and a switch disk at the exchange for each subscriber, a contact lever on said disk adapted to be operated from said dial, a zero or rest contact, a series
10 of call contacts and a series of speaking contacts for each speaking station on each of said switch disks and means for electrically

interconnecting said contacts and dials whereby subscribers can mutually connect themselves firstly by the call contacts and subsequently by the speaking contacts substantially as described.

In witness whereof I have signed this specification in the presence of two witnesses

PAUL HILDEBRAND

Witnesses:

ULYSSES J. BYWATER,
ABRAHAM SCHLESINGER.