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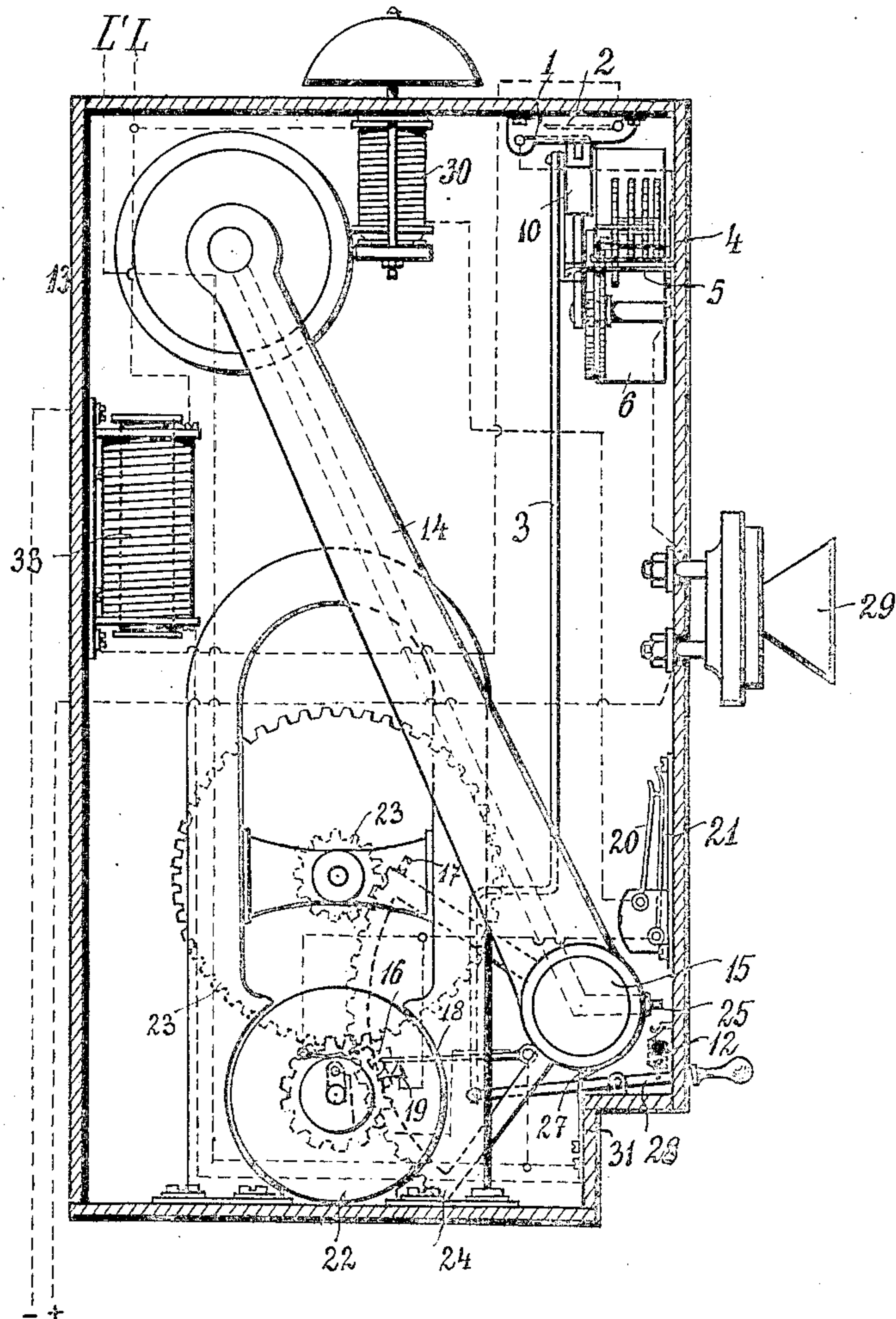
PATENTED MAR. 27, 1906.

G. FÜRST.  
TIME REGISTER FOR TELEPHONES.

APPLICATION FILED JAN. 29, 1904.

5 SHEETS—SHEET 1.

*Fig. 1*



WITNESSES

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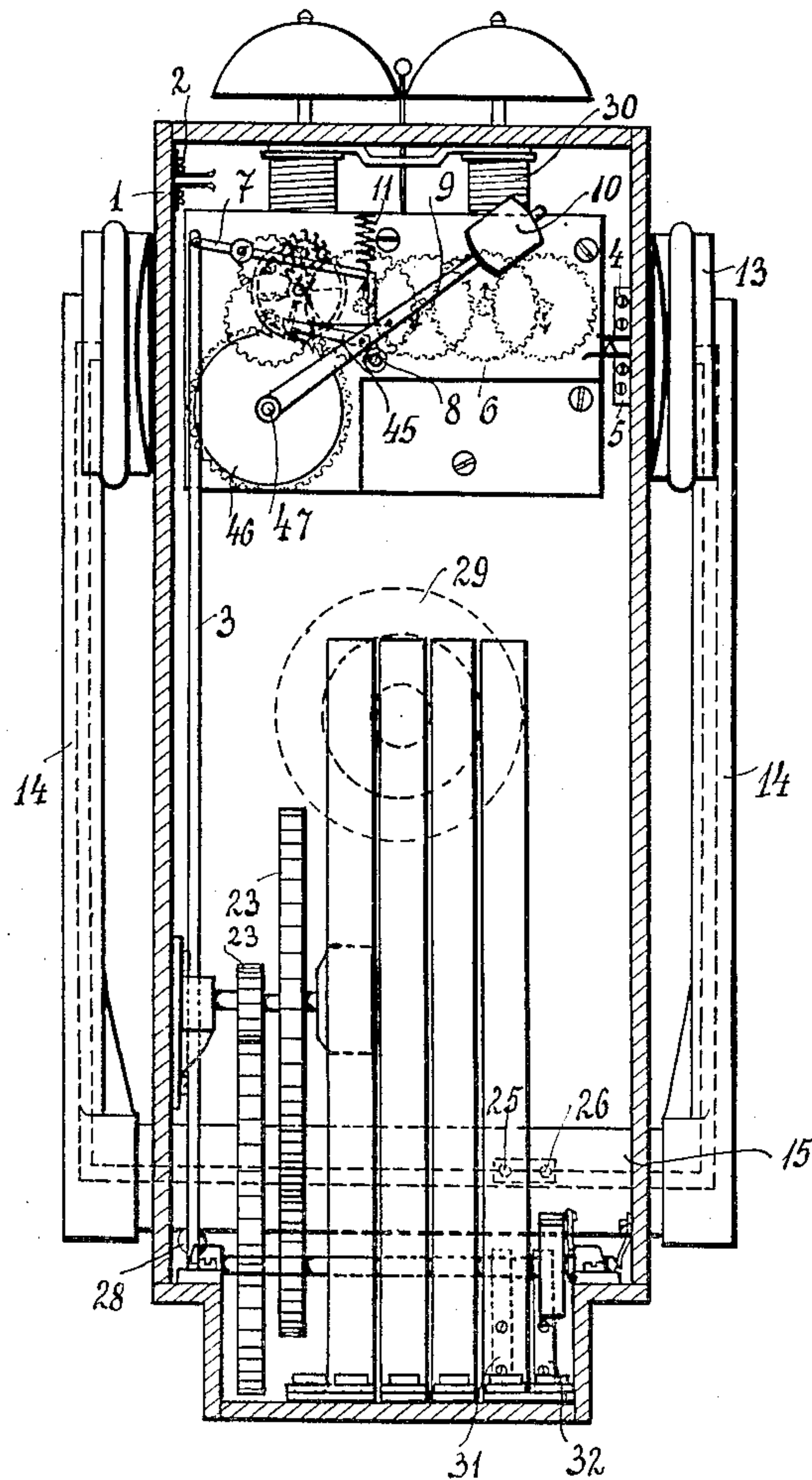
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5 SHEETS—SHEET 2.

Fig. 2.



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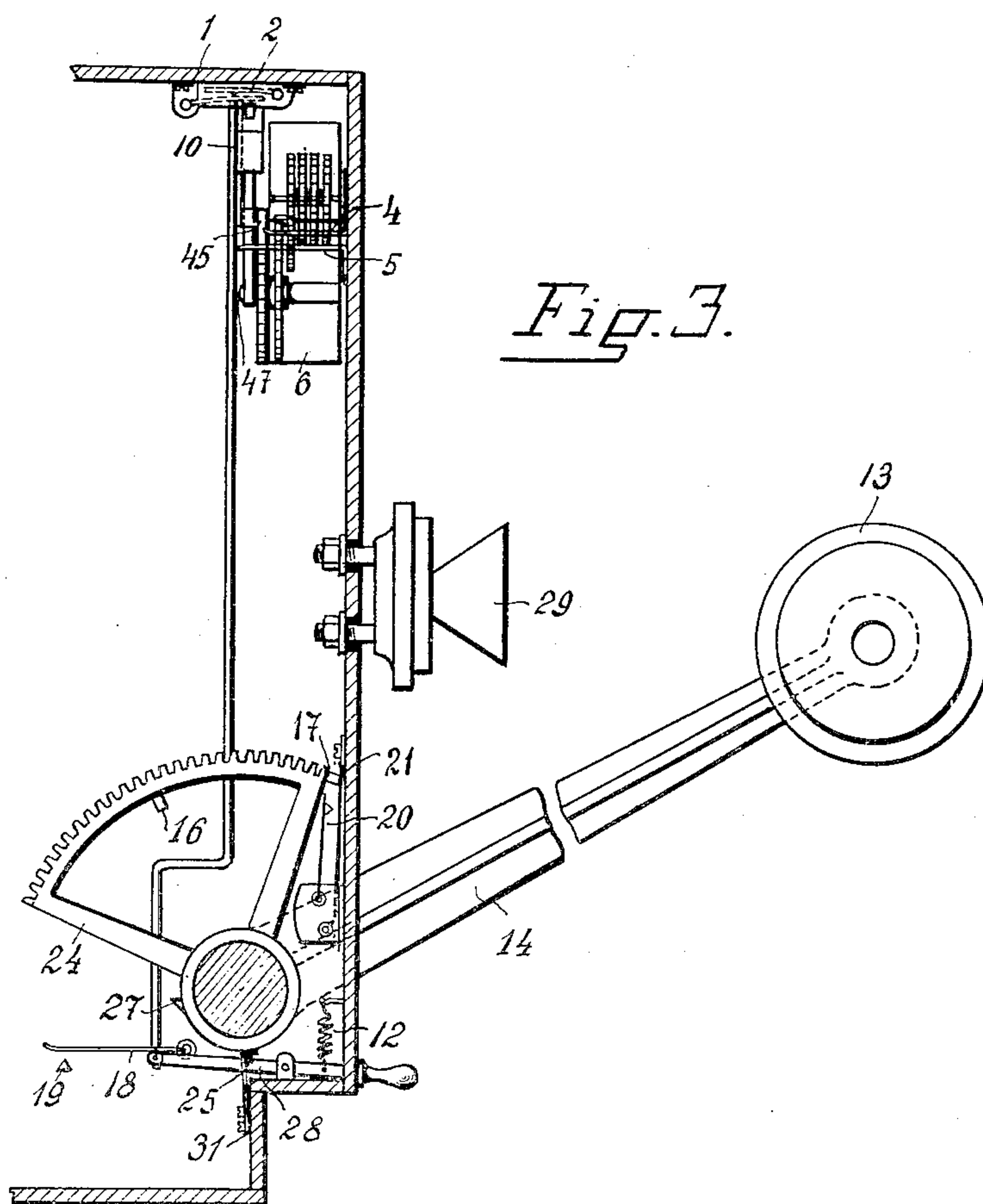
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5 SHEETS—SHEET 3.



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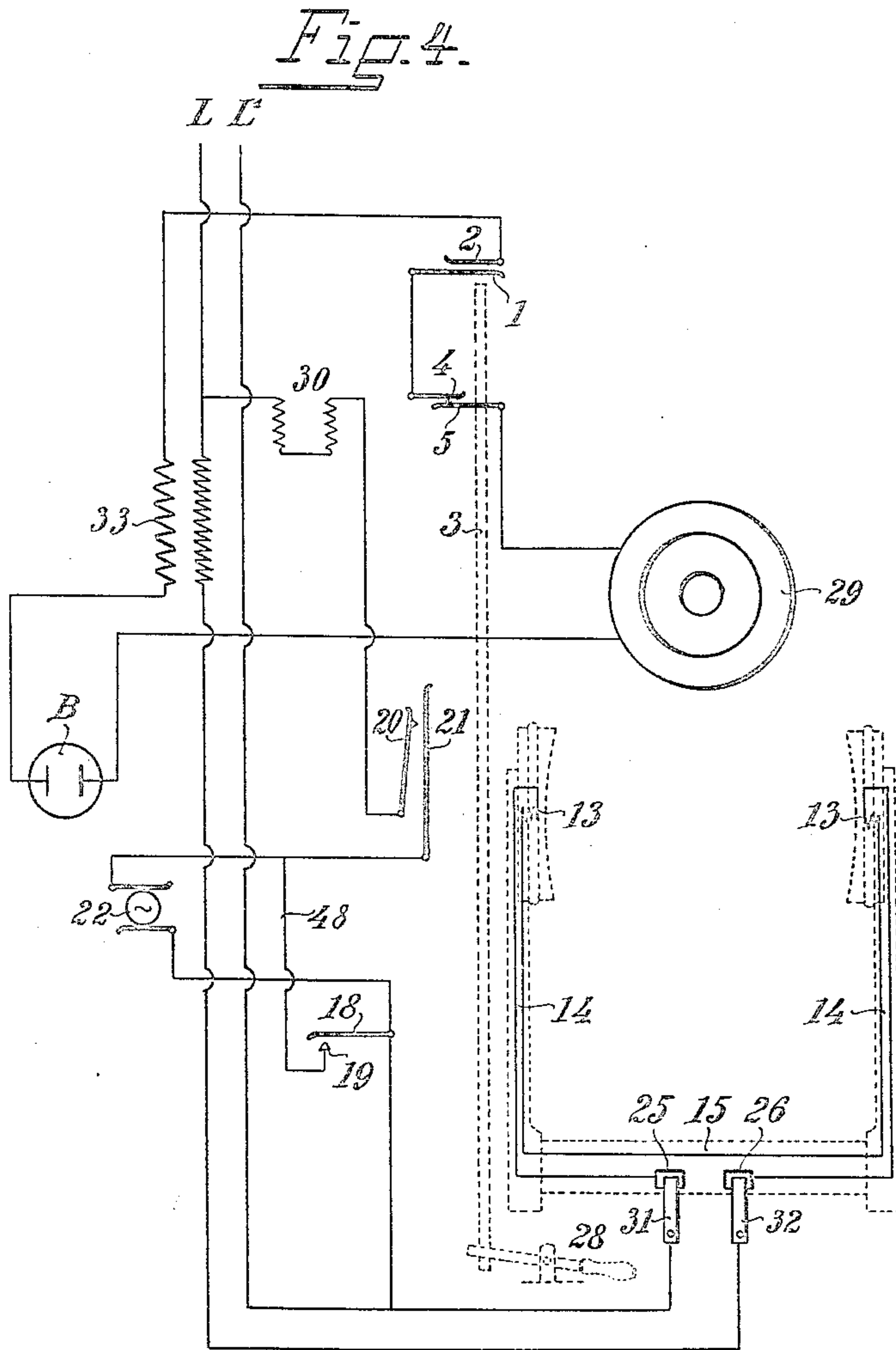
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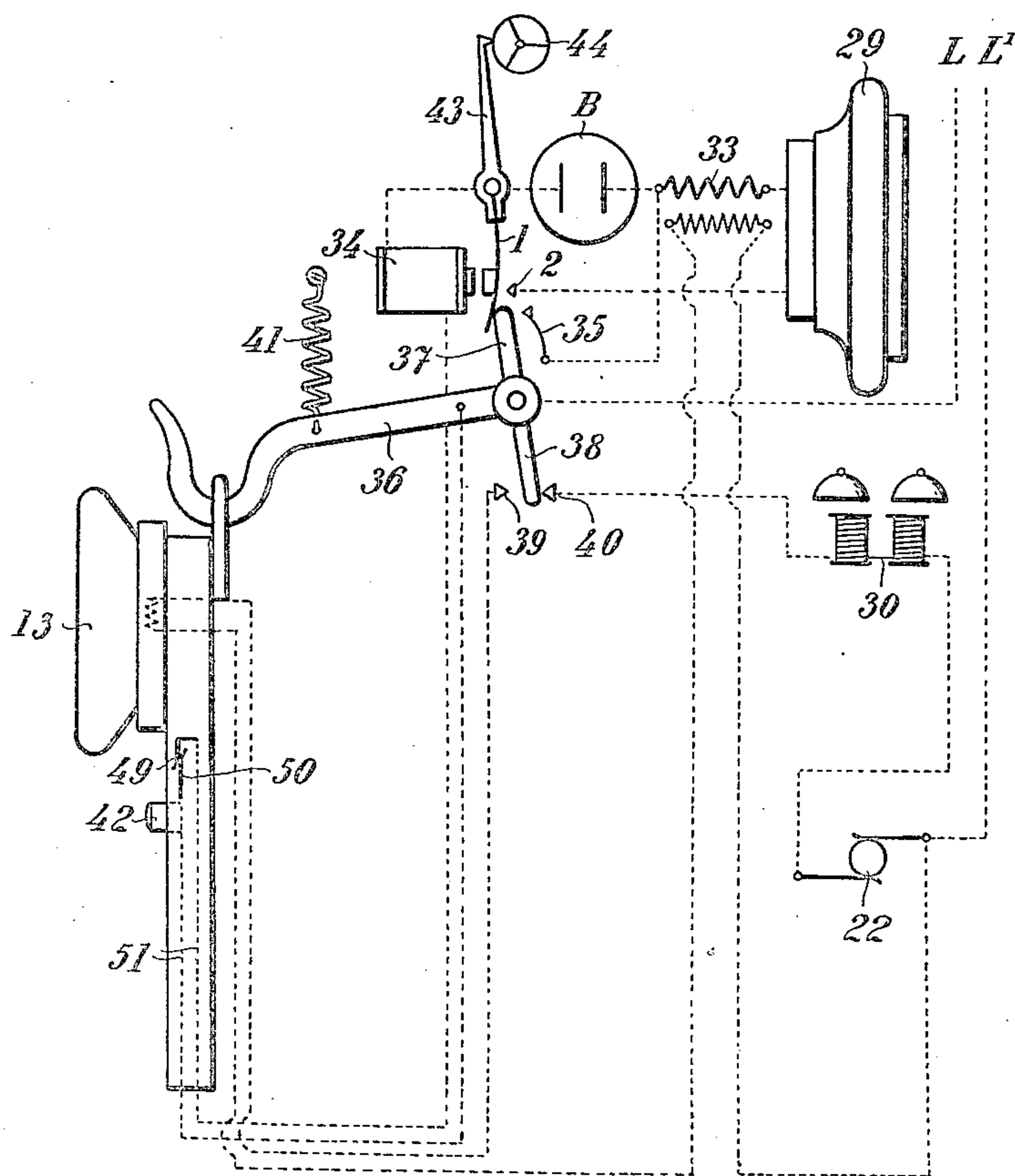
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5 SHEETS—SHEET 5.

Fig. 5.



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# UNITED STATES PATENT OFFICE.

GUSTAV FÜRST, OF POZSONY, AUSTRIA-HUNGARY.

## TIME-REGISTER FOR TELEPHONES.

No. 816,456.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed January 29, 1904. Serial No. 191,190.

*To all whom it may concern:*

Be it known that I, GUSTAV FÜRST, merchant, a subject of the King of Austria-Hungary, and a resident of Pozsony, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Time-Registers for Telephones, of which the following is a specification.

In the well-known recorders of the time of talking when using telephones either the number of times the telephone is used or the total time of use—that is to say, the sum of the times occupied in talking and listening—are recorded. According to this invention, however, only the time is recorded or registered during which the user is actually engaged in talking or using the transmitter, the time during which he listens not being recorded—that is to say, only the time of use of the transmitter and not that of the receiver is recorded. This is effected, according to this invention, by enabling the user to break the circuit of the transmitter at any desired moment independently of the circuit of the receiver, so that on the transmitter-circuit being broken the receiver or receivers of the instrument in question can be used alone. The closing of the transmitter-circuit is effected by means of a device arranged so that a part of it projects outside the casing of the instrument, the said device enabling the transmitter-circuit to be broken by the user at any desired moment, the switch affecting the switching-in of the transmitter at the same time operating the driving and locking device of a time recorder or counter in such manner that the closing of the transmitter-circuit simultaneously releases the clockwork, the breaking of the transmitter-circuit stopping the same. Owing to this arrangement, only the time during which the transmitter of the instrument is used is registered.

As far as the spirit of this invention is concerned the kind of the telephone or time-recorder used is immaterial, as is the manner in which the interrupter for the transmitter-circuit is switched in and out and connected to the ratchet or locking device of the counting apparatus.

A construction of an apparatus according to this invention is illustrated, by way of example, in the accompanying drawings, in which—

Figure 1 shows a construction of the apparatus in its position of rest in vertical longitudinal section. Fig. 2 is a back view. Fig. 3 shows the device in the position ready for talking. Fig. 4 is a diagram of connections of the apparatus. Fig. 5 shows another construction of the apparatus.

The spring-contacts 1 and 2, Fig. 1, have the tendency to keep the transmitter-circuit broken. The closing of these contacts is effected by a rod 3, arranged in the interior of the instrument-casing, the rising of said rod causing the contact-springs 1 and 2 to be pressed against each other. The movement of the rod is effected by a lever 28, which is hinged to it and projects outside the instrument through a slot in the casing thereof, a spring 12 acting on the said lever to keep it in its normal position, with the rod 3 depressed. The rod 3 also controls the time-recorder 6, which may be a chain of dial-wheels, as illustrated in Fig. 2, or any other suitable means, in such a way that when said rod 3 is raised—that is, when the handle of the lever 28 is depressed—the time-recording mechanism is released, while when the lever-handle is released it is locked again, as will be hereinafter more fully described. In the construction illustrated the movement of the lever 28—that is, of the rod 3—is also utilized for winding up the motor-train or clockwork mechanism which operates the registering means 6. This arm is provided with a pawl 45, engaging with a ratchet-wheel 46 of the clockwork mechanism, and rests on a roller 8, supported by one arm of a pivoted lever 7, the other arm of which is hinged to the rod 3. The lever 7 is acted upon by the spring 11, which tends to raise the lever 9, with the weight 10, into highest position by means of the roller 8.

Calling up, switching in of the receivers and of the transmitter, as well as the simultaneously switching out of the bell, may be effected in the usual manner, for as far as the invention is concerned the only important point is that besides these well-known devices there should be arranged a special switch 12 for the transmitter-circuit, by means of which the transmitter-circuit could be broken independently of the receiver-circuit at any desired moment by the user, while immediately the transmitter-circuit is closed by the said contacts 1 2 mechanism in a time-recorder is released and the length of time for which the transmitter-circuit is closed is recorded.

Whenever it is desired to use the transmit-



ter, the lever 28 must be depressed and held in that position during the whole time that the transmitter is used. At the same time when the lever 28 is depressed the roller 8 is lowered and releases the weighted arm 9, so that the latter can operate the ratchet-wheel 45, and thus drive the clockwork which is connected with the spindle of the said wheel. As soon, however, as the lever 28 is released and the contact at 1 and 2 thus broken the roller 8 raises the arm 9 and the time-recorder is stopped.

The time during which the clockwork acts—that is to say, the time which the weighted arm 9 takes to reach its lowest position—is preferably determined so as to correspond with the ordinary duration of a conversation. Should, however, the clockwork stop before the end of the conversation, the free end of the arm 9 in its lowest position operates a contact-spring 5, and thus breaks the contact between 4 and 5. The contacts 4 and 5 are in the transmitter-circuit, (see Figs. 1,) so that when this contact is broken the transmitter-circuit is broken. Should this happen, it will be sufficient merely to release the lever 28 for one moment and then depress it again, whereupon the weighted arm will be raised and the clockwork start anew.

In order that both receivers may be simultaneously used and at the same time the hands may be left free for moving the lever 28, the receivers 13 are preferably arranged on arms 14, secured to the ends of a spindle 15, passing transversely through the casing of the instrument. When the instrument is not in use, the arms 14 are in the position shown in Figs. 1 and 2, the two receivers adjoining the lateral walls of the casing of the instrument. In this position the current from the line L, Fig. 4, passes through the bell-circuit 30, contact-springs 20 21, through the wire 48, and contacts 19 18 to the line L', since the contacts 1 2 25 31 and 26 32 are broken. If, however, it is desired to use the apparatus, the arms 14 are turned forward, which brings the receivers into the position of use, Fig. 3. During this turning movement the spindle 15 effects all the switching required—that is to say, the pin 16 on the segment 24, Fig. 1, releases the spring 18, which normally short-circuits the armature 22 of the bell-inductor with the contact-pin 19, and at the same time the toothed segment 24 on the spindle through the pinion 23 causes the armature 22 of the bell-inductor to turn, thereby calling up the other user. At the end of the path through which the spindle 15 turns the pin 17 on the segment separates the contact-spring 21 from the spring 20, Fig. 3, and thus breaks the contact which held the bell switched into the line-circuit, thus cutting out the bell. At the same time the contacts 25 26, mounted on and electrically insulated from the spindle 15, Fig. 2,

come into engagement with the contact-springs 31 32. These latter switch both the instruments into the line-circuit, the transmitter-circuit remaining, however, open until the lever 28 is depressed. During the movement of the arms 14 before the pin 17 breaks contact at 20 21 the circuit from L is closed through 30, 20, 21, 22, and L', while in the extreme position of the arms 14 (shown in Fig. 3) the current passes from L through the secondary winding of the induction-coil 33, contacts 32 26, the receivers 13 13, contacts 25 31, and into the line L'. When, however, by depressing the lever 28 contact is made at 1 2, the circuit of the battery B is closed through the primary winding of the induction-coil 33 and the transmitter 29. The spindle 15 is also provided with a projection 27, Figs. 1 and 3, which prevents the lever 28 from moving when the instrument is in the position of rest, Fig. 1. If, however, it be desired to keep to the usual free handling of the receivers and also to render it possible to use both, a press-button 42 may be arranged on one of the handles of the receivers, as diagrammatically shown in Fig. 5. In that construction the transmission of the movement of the press-button to the switch 1 2 in the interior of the instrument and to the ratchet device of the time-recorder is effected by electrical means, such as an electromagnet 34. This electromagnet is preferably supplied with current from the source of current B of the transmitter and is switched in parallel with the transmitter or microphone. So long as the receiver 31 hangs on the hook 36 the circuit of the transmitter is broken, since the arm 37 of the hook 36 holds the armature of the electromagnet forming one contact 1 away from the stud 2, and, on the other hand, the circuit of the electromagnet 34 is broken at 37 35. When the receiver is lifted off the hook 36, the latter effects in the well-known manner the necessary contact make and break, the arm 37 closing the electromagnet-circuit by means of contact 35, so that the electromagnet becomes operative and attracts its armature. Owing to this, the transmitter-circuit in spite of the arm 37 having released the armature remains broken at 1 2, so that only the receivers can be used, the transmitter-circuit being broken. When it is desired to use the latter, the knob 42 on one of the receivers is depressed, the electromagnet-circuit being broken at 49 50, all current thus being cut off from the said electromagnet 34, whose armature is then released and the contact between 1 and 2 closed. The movements of the armature are transmitted to the ratchet device of the time-recorder in any desired manner—as, for instance, in the drawings, by the hook 43 secured to the armature and engaging with the balance 44 of the time-recorder—so that the making of the contact between 1 and 2 at the



same time brings about the release of the clockwork.

The wires 51 are arranged in the cable leading to the receiver. If it is desired to  
5 arrange pressure-knobs 42 on both receivers, the switches 49 50 on both the telephones must be arranged in series with each other.

I claim as my invention—

1. A time-register for telephones, provided  
10 with means for registering the time of use of the transmitter independently of the receiver.

2. A time-register for telephones, comprising a motor-train mechanism, a transmitter and means to permit both to act together and  
15 a receiver adapted to be used independently of the mechanism and transmitter.

3. A time-register for telephones, comprising a motor-train mechanism, a transmitter and transmitter-circuit, and manually-operated means for placing said mechanism and  
20 transmitter into operative position and a receiver independent of the mechanism and transmitter.

4. A time-register for telephones, comprising a motor-train mechanism, a transmitter,  
25 a transmitter-circuit, and manually-operated means for placing said mechanism and transmitter into operative position, in combination with means adapted to actuate such

mechanism, itself actuated by said manually- 30 operated means.

5. A time-register for telephones, comprising a motor-train mechanism, a transmitter, a transmitter-circuit, a receiver, an electro-  
35 magnetic mechanism adapted to make inoperative the mechanism and transmitter, and a circuit-closing device to operate said electromagnetic mechanism.

6. A time-register for telephones, comprising a motor-train mechanism, a transmitter, 40 a transmitter-circuit, a receiver, an electromagnetic mechanism adapted to make inoperative the mechanism and transmitter, the receiver carrying in its handle a circuit-closing device for operating said electromagnetic  
45 mechanism, said receiver itself being unaffected by said mechanism.

7. A time-register for telephones, in combination with a receiver and a transmitter and means for registering the time of use of  
50 one independently of the other.

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

GUSTAV FÜRST.

Witnesses:

EUGENE HARSANY,  
LOUIS NANDORY.