

No. 881,058.

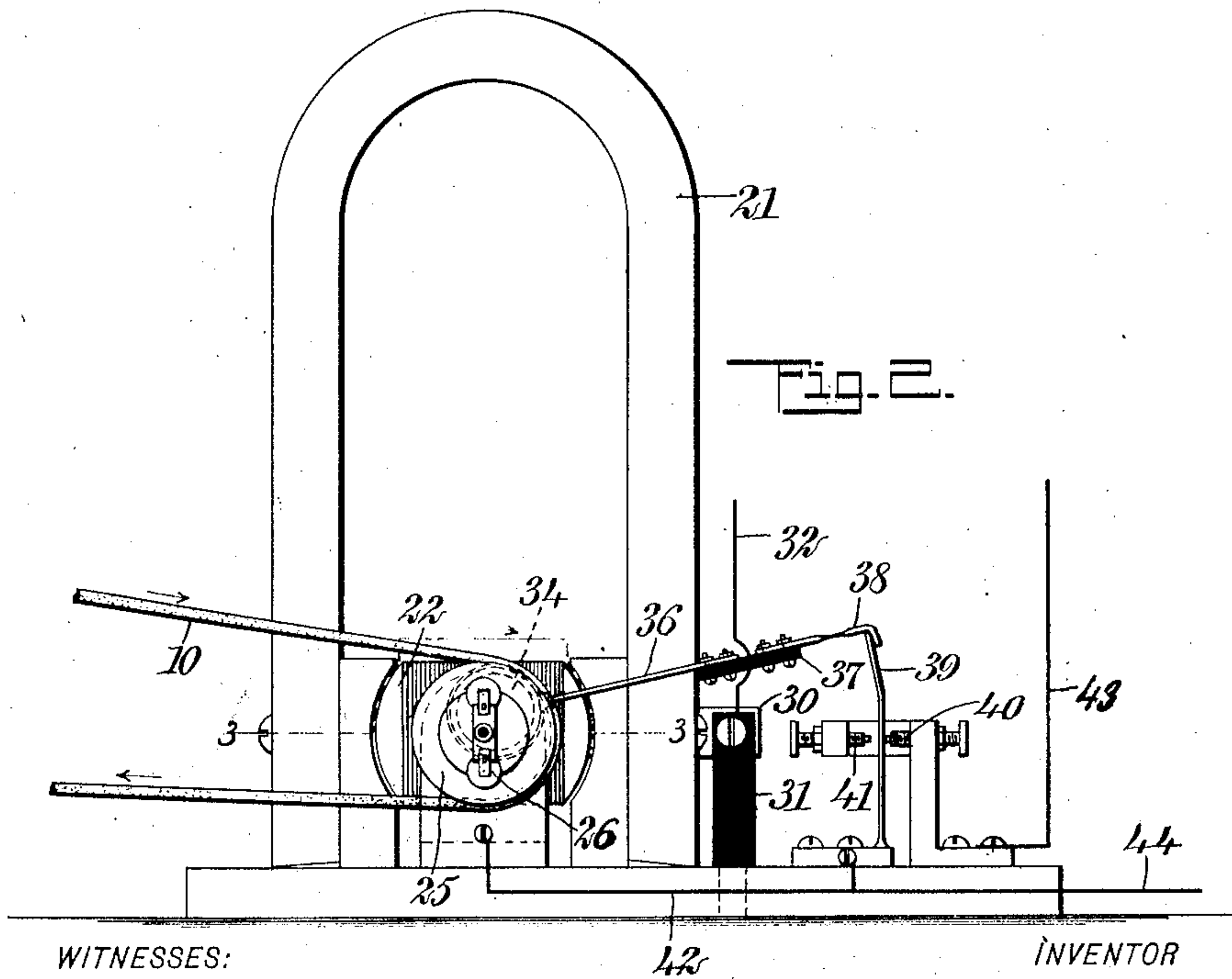
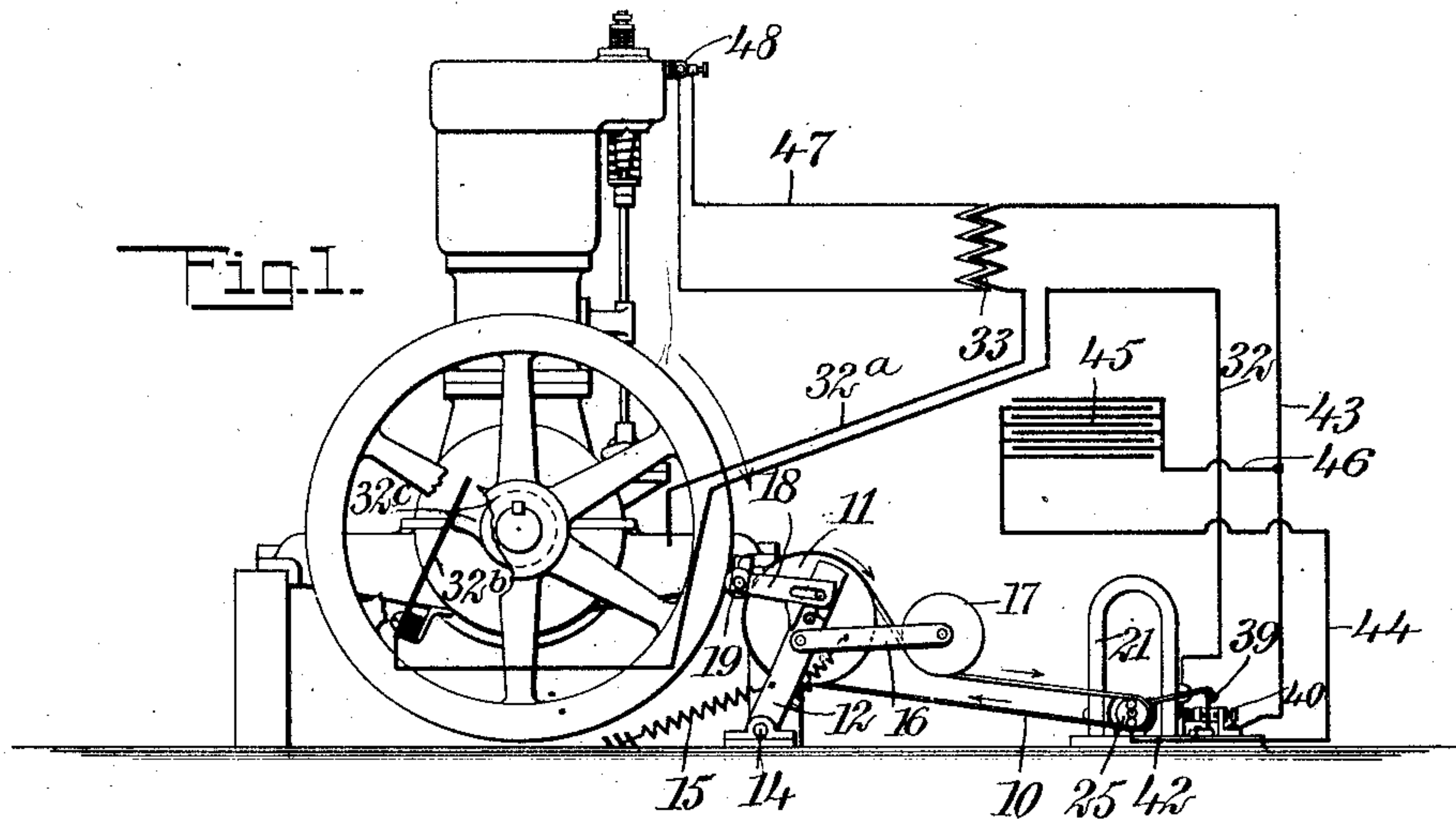
PATENTED MAR. 3, 1908.

A. N. CLASSON.

GAS ENGINE IGNITER.

APPLICATION FILED APR. 20, 1906.

2 SHEETS—SHEET 1.



WITNESSES:

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2 SHEETS—SHEET 2.

Fig. 3.

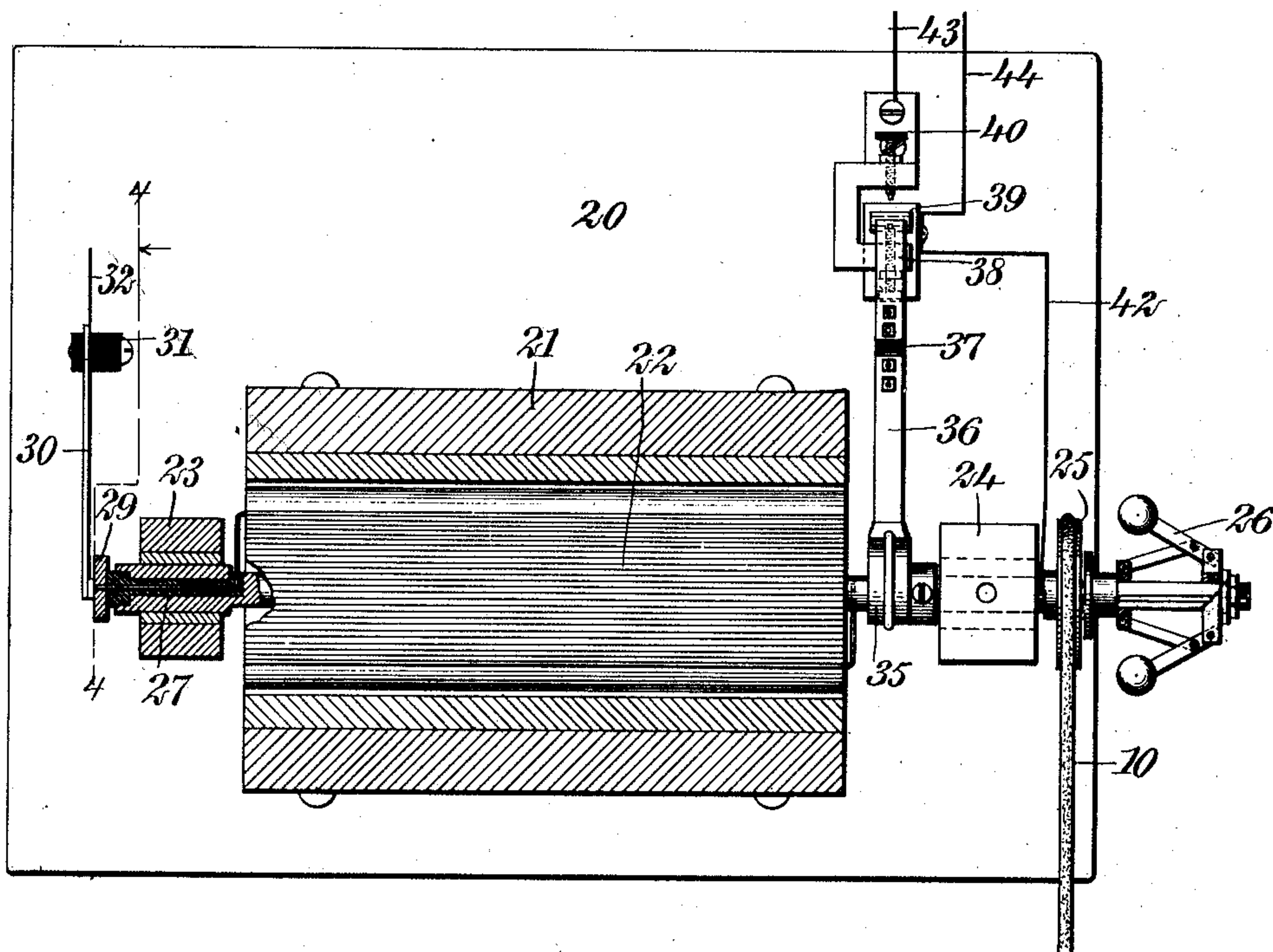


Fig. 4.

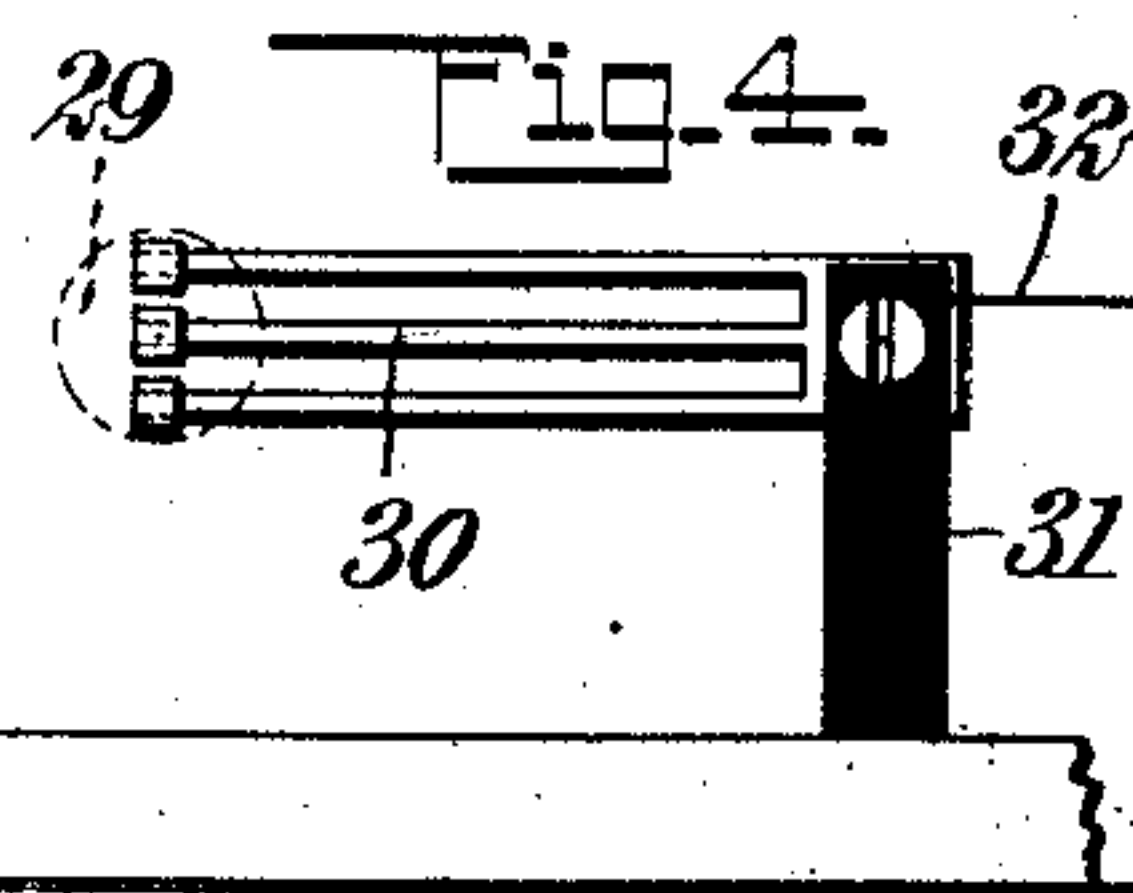
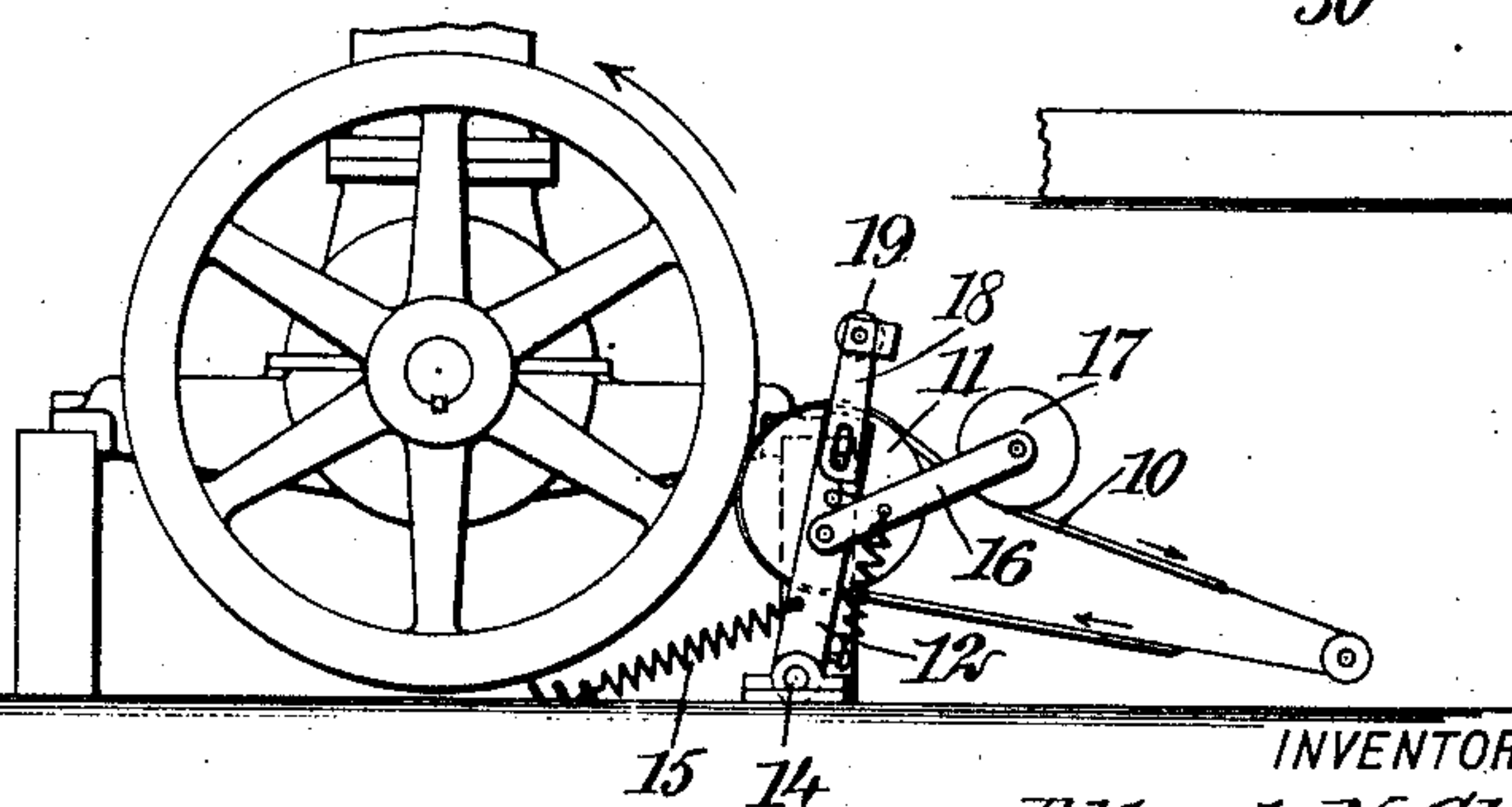


Fig. 5.



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UNITED STATES PATENT OFFICE.

ALBERT N. CLASSON, OF RUTLAND TOWNSHIP, LASALLE COUNTY, ILLINOIS.

GAS-ENGINE IGNITER.

No. 881,058.

Specification of Letters Patent.

Patented March 3, 1908.

Application filed April 20, 1906. Serial No. 312,800.

To all whom it may concern:

Be it known that I, ALBERT N. CLASSON, a citizen of the United States, and a resident of Rutland township, in the county of Lasalle and State of Illinois, have invented a new and Improved Gas-Engine Igniter, of which the following is a full, clear, and exact description.

The invention relates to an electrical igniting apparatus intended particularly for gas or internal combustion engines, but involving various features adapted to other arts as will fully appear hereinafter.

An object of the invention is to avoid the vibrator on the spark coil of the conventional jump spark system of ignition, and instead to provide a vibrator for such ignition systems which will be operated mechanically and positively.

A further object is to so arrange the apparatus as to secure an alternating current in the secondary circuit of the induction coil.

A further object is to so arrange the parts as to secure two distinct sparks in the secondary circuit to one revolution of the armature of the magneto or generator.

Various other features of major or minor importance are involved, and all will be fully set forth hereinafter.

Reference is to be had to the accompanying drawings which illustrate as an example the preferred embodiment of my invention, in which drawings

Figure 1 is a front elevation of a conventional internal combustion engine showing my invention applied, and illustrating the circuits by diagrams; Fig. 2 is an enlarged front view of the magneto; Fig. 3 is a sectional plan thereof on the line 3—3 of Fig. 2; Fig. 4 is a detail view of the collector brush of the magneto, looking in the direction of the line 4—4 of Fig. 3; and Fig. 5 is a fragmentary elevation illustrating the action of the magneto driving device.

Referring particularly to Figs. 1 and 5, 10 indicates the belt for driving the magneto, which belt is preferably round in cross sectional form and is run over a main driving pulley 11, the periphery of which is formed with a comparatively shallow groove enabling the belt to engage the fly wheel of the engine as shown in Fig. 5. Said pulley 11 is carried on an arm 12 which is mounted to swing around a pivot 14, and a spring 15 is fastened to said arm tending to move the same toward the fly wheel. Said arm 12

pivotally carries an arm 16 on which a belt tightening pulley 17 is mounted, the pulley bearing on the top run of the belt, as shown. A third arm 18 is fastened on the free end of the arm 12, and carries a small friction roller 19. Said arm 18 may assume either one of the two positions shown in Figs. 1 and 5. In starting the engine should the engine be rocked backward during the starting operation, the arm 18 should be thrown down as shown in Fig. 1, thus engaging the roller 19 between the pulley 11 and the periphery of the fly wheel, causing the belt 10 to be driven in the direction of the arrows shown in Fig. 1 during the reverse movement of the engine. As the engine takes up its normal operation and moves in the direction of the arrow shown in Fig. 5, the roller 19 is thrown up into inactive position, and the spring 15 permitted to draw the pulley 11 over so as to engage the belt 10 directly with the fly wheel, thus continuing the movement of the belt in the same direction as that in which it previously moved (see the arrows applied to the belt in Fig. 5). These operations, therefore, insure driving the magneto at all times in the same direction, and it is useful not simply in starting the engine but on the reversal thereof for any other reason.

The magneto is mounted on a suitable base 20, and comprises a front magnet 21 and a simple shuttle laminated armature 22, the latter being mounted to rotate on bearings 23 and 24 carried between the poles of the magnets. The driving belt 10 passes over a pulley 25 on the shaft of the armature, and the driving action is controlled by a centrifugal governor 26, which may be of the usual or any desired form. One terminal of the armature is passed through an insulation sleeve 27 on the shaft of the armature to a disk 29 at the end of said shaft and insulated therefrom. On said disk a collector brush 30 bears, which brush as shown in Figs. 2 and 3, is supported by a post 31 and is connected by a wire 32, brush 32^b, contact 32^c, engine frame, and wire 32^a, with the primary winding of an induction coil 33 (see Fig. 1).

Fastened to the shaft of the armature 22 is an eccentric 34, which is encircled by a strap 35 having a rod 36 in connection therewith. The rod 36 is joined by an insulating connector 37 with a spring hook 38, and this engages the moving contact 39 of a vibrator which in addition to said contact is composed of two stationary oppositely arranged con-

tacts 40 and 41. This arrangement causes two sparks for each revolution of the armature. The second terminal of the armature is in connection with the shaft; and from this
 5 a wire 42 leads to the contact 39 of the vibrator. From the contact 40 a wire 43 leads to the primary winding of the spark coil 33. In connection with the wire 42 and contact 39 is
 10 a wire 44 which leads to a condenser 45, and said condenser is also in connection with the wire 43 by means of a conductor 46. The secondary circuit 47 of the induction coil 33 is in connection with a spark plug 48 of the engine in the usual manner.

15 In the operation of the apparatus, the magneto being constantly driven by the automatic action of the driving device, as before explained, and the vibrator being positively and regularly actuated by mechanical
 20 devices set in motion from the magneto, a regularly broken alternating current will be passed through the primary winding of the induction coil, inducing an alternating current of high tension in the secondary circuit
 25 47, which in passing the electrodes of the spark coil produces a quick succession of sparks. The spark is controlled by the distributor device composed of the parts 32^b and 32^c or any equivalent thereof. The magneto runs freely except when the primary
 30 circuit is closed by the commutator.

Having thus described the preferred form of my invention, what I claim as new and desire to secure by Letters Patent is:

35 1. An ignition apparatus for internal combustion engines, comprising a magneto, an eccentric located upon the shaft of the armature thereof, a vibrator electrically connected to said magneto, binding posts oppositely
 40 posed in the path of the vibrator, an eccentric rod connected to said eccentric and to said vibrator, and a condenser in parallel with said vibrator and binding posts, where-

by the vibrator may be positively operated and an alternating current generated. 45

2. An electric ignition apparatus for internal combustion engines, comprising a primary circuit, including an induction coil, a magneto, means operatively connected to said magneto for interrupting the circuit, a
 50 condenser in parallel with said interrupter, and means operatively connected to the engine for interrupting the circuit, and a secondary circuit including sparking terminals within the engine and said induction coil. 55

3. An ignition apparatus for internal combustion engines, comprising a magneto, a vibrator electrically connected to said magneto and mechanically operated by the rotation of the armature thereof, binding posts oppositely
 60 disposed in the path of the vibrator, and a condenser in parallel with said vibrator and binding posts, whereby the vibrator may be positively operated and an alternating current generated. 65

4. An electric ignition apparatus for internal combustion engines, comprising a primary circuit, including an induction coil, a magneto, means operatively connected to said magneto for interrupting the circuit, said
 70 means comprising an eccentric upon the shaft of the armature of the magneto, an eccentric rod, and a vibrator in engagement with said rod and operated thereby, a condenser in parallel with said interrupter, and means operatively
 75 connected to the engine for interrupting the circuit, and a secondary circuit including the sparking terminals within the engine and said induction coil.

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

ALBERT N. CLASSON.

Witnesses:

SHERMAN LEWIS,
 E. W. ZIBBELL.