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H. C. ROYER.
IGNITION APPARATUS FOR EXPLOSION ENGINES.
APPLICATION FILED OCT. 15, 1906.

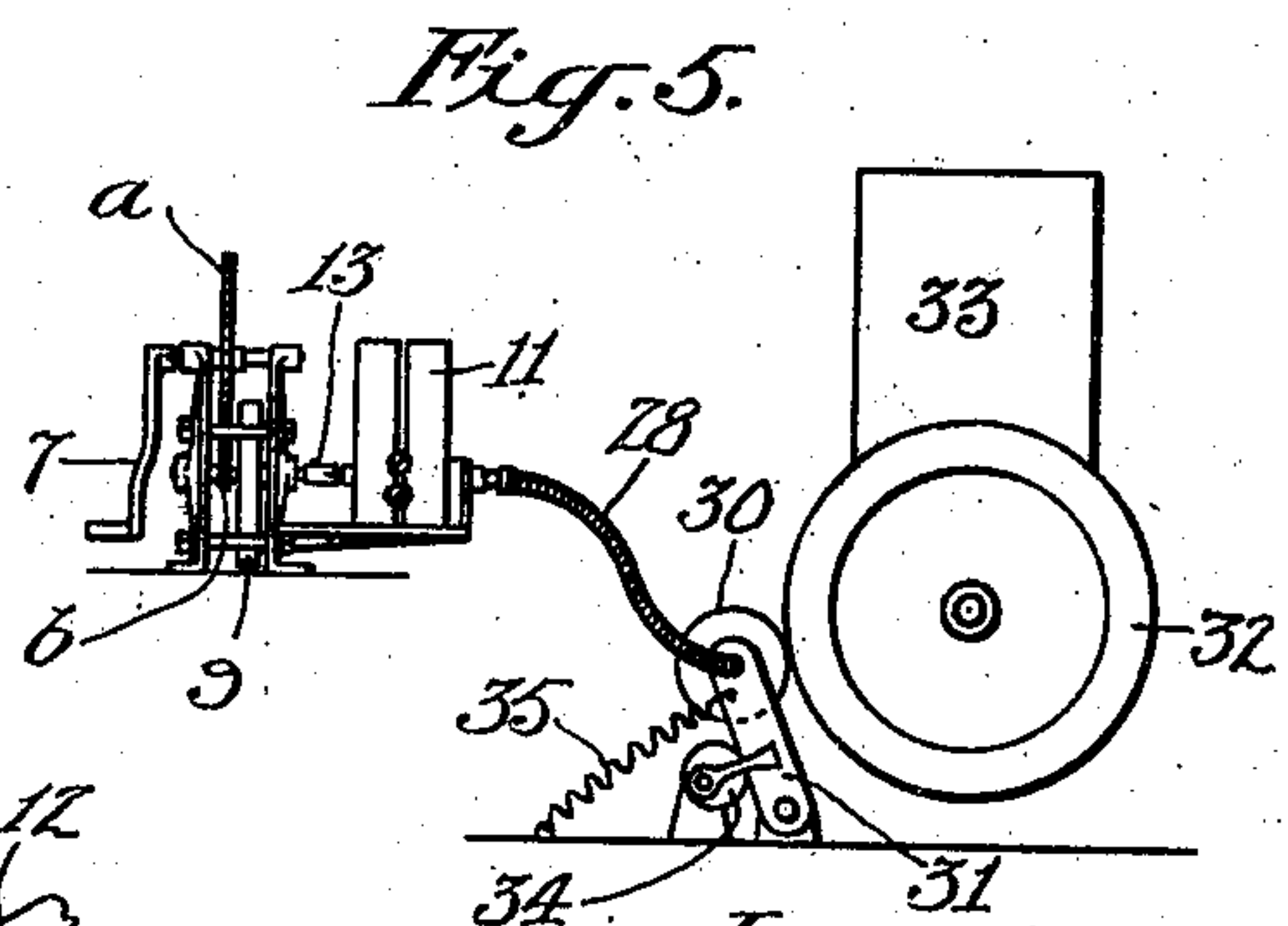
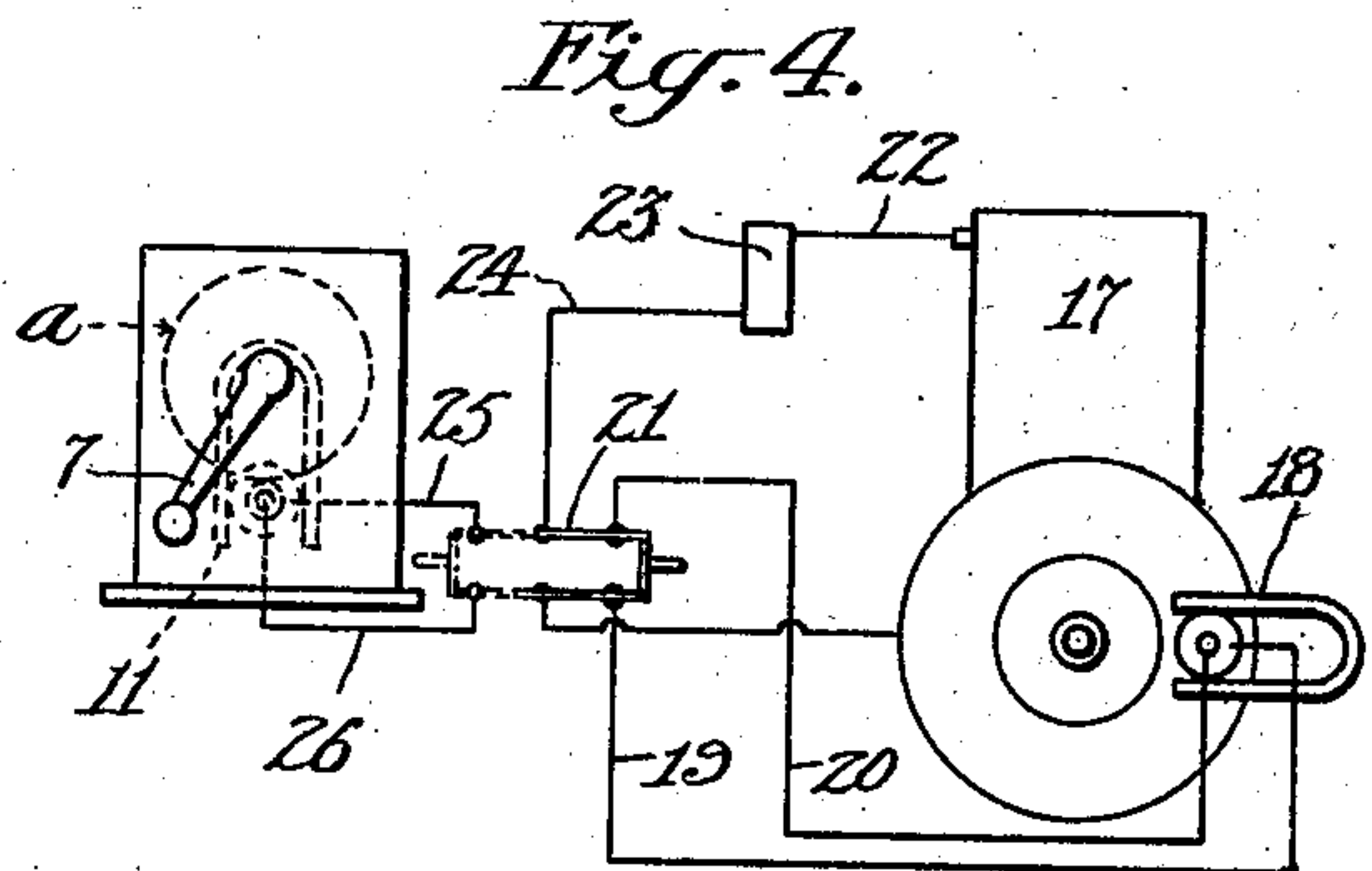
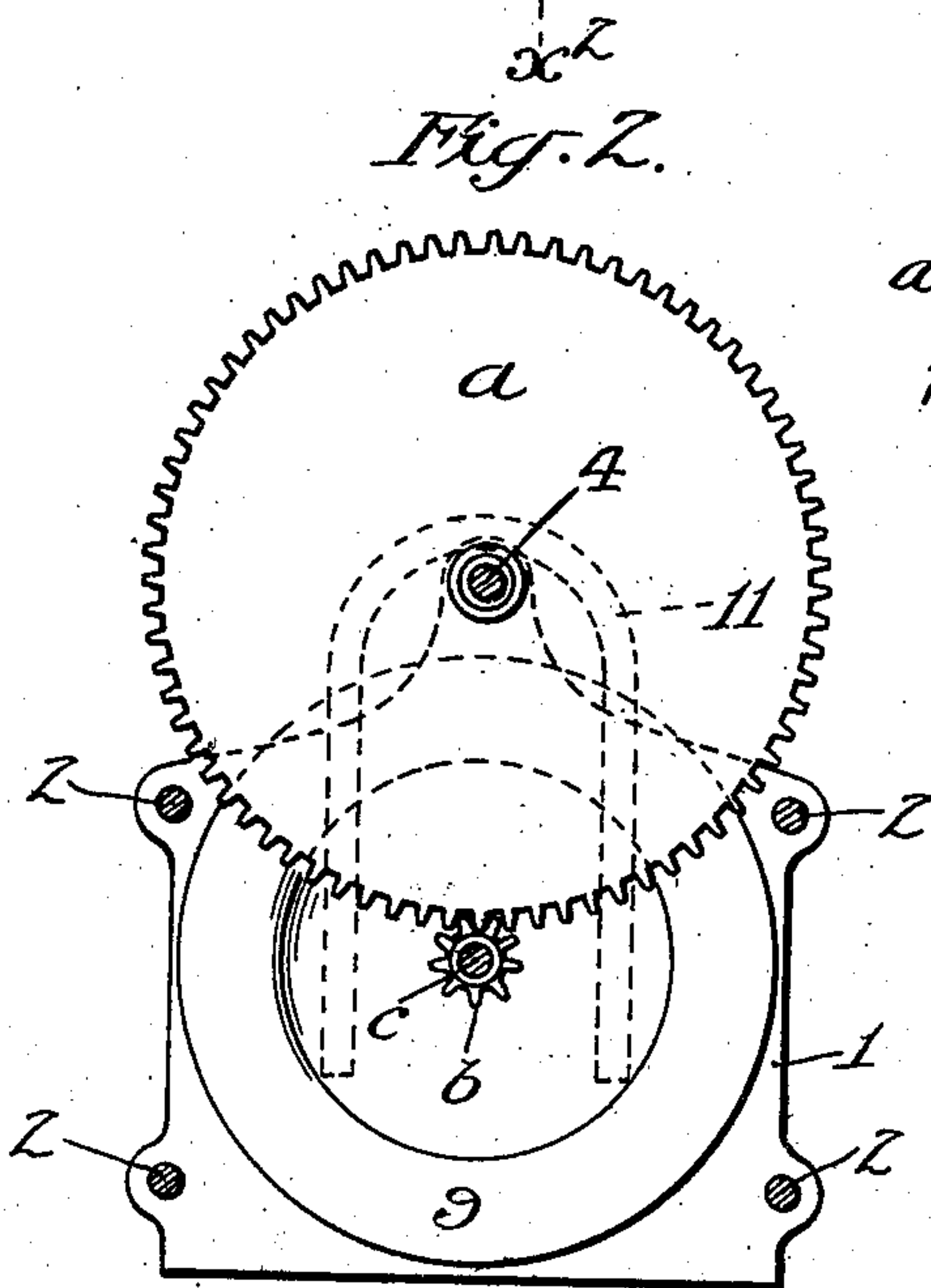
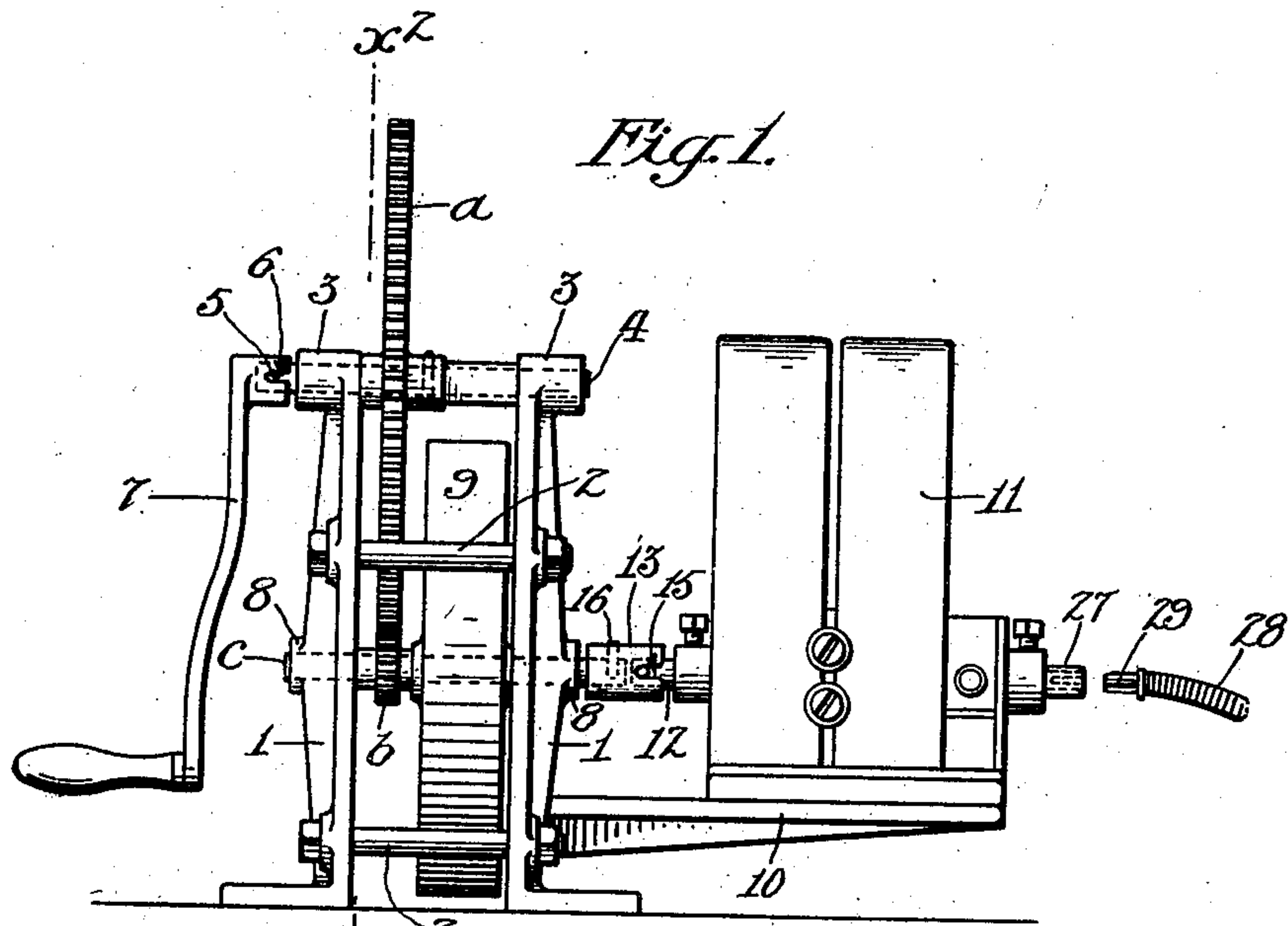
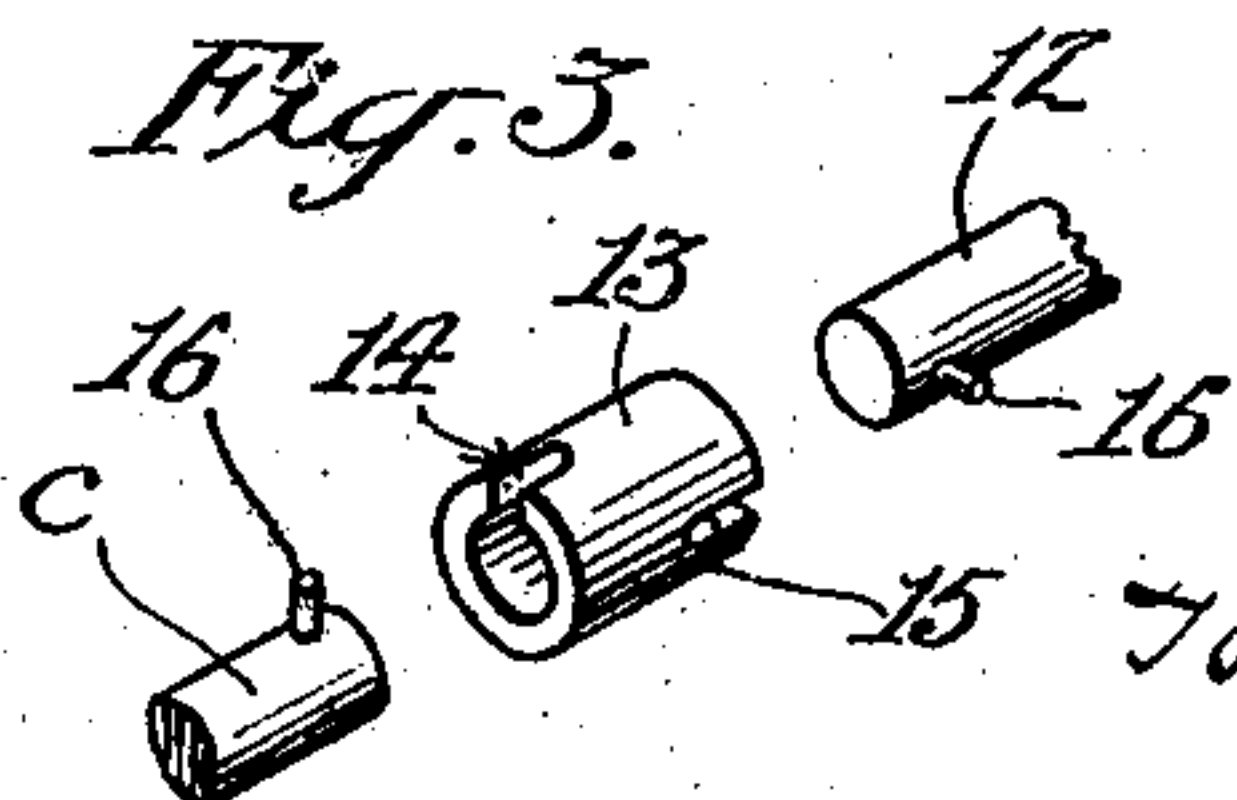


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

HENRY C. ROYER, OF TERMINAL ISLAND, CALIFORNIA.

IGNITION APPARATUS FOR EXPLOSION-ENGINES.

No. 847,296.

Specification of Letters Patent.

Patented March 12, 1907.

Application filed October 15, 1906. Serial No. 339,137.

To all whom it may concern:

Be it known that I, HENRY C. ROYER, a citizen of the United States, residing at Terminal Island, in the county of Los Angeles and State of California, have invented a new and useful Ignition Apparatus for Explosion-Engines, of which the following is a specification.

This invention relates to ignition apparatus for explosion-engines.

The invention is particularly designed for marine or launch engines wherein the use of batteries is disadvantageous; and the main object of the present invention is to employ an ignition system with a regular generator and with a starting-magneto and to provide for furnishing the current from either the magneto or the regular generator, the magneto being manually operated when used in starting, and when the engine is started the magneto is cut out and the regular generator cut in.

A further object is to enable the magneto to be driven by the engine in case of failure of the regular generator.

A further object is to provide for manually storing sufficient mechanical power in the starting-magneto to cause it to operate without attention for a period of time sufficient to enable the engineer to attend to the engine proper.

The magneto may be located at any convenient or retired place in the boat—as, for example, in the bow. In starting, the engineer in casting off would be at the bow and would give the handle of the device a few revolutions, and the device would then run for a sufficient time without attention, enabling the engineer to pass astern or amidships to where the engine is located and start the engine, the starting-magneto running for a period of time which is ample for the purpose.

The accompanying drawings illustrate the invention, and referring thereto—

Figure 1 is a side elevation of the invention complete. Fig. 2 is a section on line x^2 , Fig. 1. Fig. 3 is a perspective view showing the device used for connecting the magneto-shaft with the driving-shaft. Fig. 4 is a diagrammatic view showing the manner of connecting the device with the engine. Fig. 5 is a side view showing the power attachment connected to the magneto.

1 designates a pair of frame-plates which are united by cross-braces 2, the upper ends

of the plates 1 having journals 3, in which is mounted a shaft 4, one end of which has a pin 5, which is adapted to be engaged by the notched hub 6 of a crank 7. Mounted rigidly on the shaft 4 is a driving-gear a , which meshes with a pinion b , the latter being rigidly mounted on an intermediate shaft c , mounted in journals 8 in the plates 1. A fly-wheel 9 is rigidly mounted on the intermediate shaft c between the plates 1.

Extending from one of the plates 1 is a bracket 10, upon which is mounted a magneto 11, which may be of any preferred construction and having a shaft 12, which is connected with the intermediate shaft c by a coupling comprising a sleeve 13, having in one end a notch 14 and in the other end a notch 15, the latter being arranged at right angles with respect to the notch 14. Intermediate shaft c has a pin 16, which engages in the slot 14, and the shaft 12 has a pin 16, which engages with the notch 15. This coupling obviates the necessity of securing absolute alinement of the shafts c and 12 and insures the perfect operation of the shaft 12 without throwing any strain on the bearings, even if the magneto is not exactly in position. The device may be connected with the engine, as shown in Fig. 4, in which 17 designates the explosive-engine with regular magneto 18 for furnishing the spark in the normal operation of the engine. Wires 19 and 20 lead from the regular magneto 18 to a double-throw switch 21. A wire 22 leads from the spark-plug of the engine to the induction-coil 23, and a wire 24 leads from the induction-coil to switch 21. Wires 25 and 26 lead from the starting-magneto to the switch 21.

When the engine is operating normally, the switch 21 stands, as shown in Fig. 4, connecting in the wires 19 and 20. In starting the engine the switch 21 is thrown to bring the wires 25 and 26 in circuit with wire 24, self-induction coil 23, and wire 22. The crank 7 is then turned to speed up the starting-magneto, and enough energy is stored in the fly-wheel 9 to cause the starting-magneto to be run by the momentum of the fly-wheel for a considerable time. As soon as the engineer has started the starting-magneto he then gives his attention to the engine, and as soon as the engine is working he throws the switch 21 back to normal position, cutting the starting-magneto out of circuit and cutting in the regular dynamo.

The starting-magneto may be driven by power if the regular generator becomes disabled by employing a power connection, one form of which is shown in Fig. 5. The outer end of the shaft 12 is formed with a socket 27, which receives one end of a flexible shaft 28, the latter having a quill 29 for engaging in the socket, which while driving the magneto permits necessary end play of the flexible shaft while in operation. The other end of shaft 28 is connected to a friction-wheel 30, carried on a rock-frame 31 and adapted to be driven by the fly-wheel 32 of the engine 33. The frame 31 is rocked to engage the friction-wheel with the fly-wheel by means of a lever-operated eccentric 34, which bears against the frame, the frame being retracted when released by the eccentric by a spring 35.

What I claim is—

1. In combination, an explosion-engine, a generator for normally supplying the spark, a magneto, and manually-operated means for storing up power in the form of momentum for driving the magneto.
2. In combination, an explosion-engine, an ignition-circuit therefor, a regular generator, a starting-magneto, a fly-wheel, a crank-operated train of gears for imparting considerable momentum to the fly-wheel, means for driving the magneto by the momentum of the fly-wheel, and means for connecting the regular generator or the starting-magneto in the ignition-circuit.
3. In combination, an explosion-engine, a generator for normally supplying the spark, a magneto and shaft, a fly-wheel shaft, pins on the respective shafts, a sleeve over the ends of both shafts and having notches in its ends which engage with pins on the shafts, a fly-wheel on its shaft, a pinion on the fly-wheel shaft, a gear meshing with the pinion, a shaft supporting the gear, a crank for operating the latter shaft, and a suitable frame for supporting said gearing and magneto.
4. In combination, an explosion-engine, a generator for normally supplying the spark, a starting-magneto and shaft, a fly-wheel shaft connected with the first shaft, a fly-wheel on its shaft, a pinion on the fly-wheel

shaft, a gear meshing with the pinion, a shaft supporting the gear, a crank for operating the latter shaft, and a frame for supporting said gearing and magneto.

5. In combination, an explosion-engine, a generator for normally supplying the spark, a magneto, manually-operated means for storing up power in the form of momentum for driving the magneto, means for making electric connection between the engine and either the generator or magneto, and means for driving the magneto by the engine.

6. In combination, an explosion-engine, a generator for normally supplying the spark, a magneto, manually-operated means for storing up power in the form of momentum for driving the magneto, means for making electric connection between the engine and either the generator or magneto, a shaft driven by the engine, and means for detachably connecting said shaft to the magneto.

7. In combination, an explosion-engine, a generator for normally supplying the spark, a magneto, manually-operated means for storing up power in the form of momentum for driving the magneto, means for making electric connection between the engine and either the generator or magneto, a shaft adapted to be driven by the engine, and means for detachably connecting said shaft to the magneto while the magneto is operating under momentum, and permitting the magneto to be independently operated by hand when said shaft is disconnected from the engine.

8. In combination with an explosion-engine, a magneto, manually-operated means for storing up power in the form of momentum for driving the magneto, and means for driving the magneto from the engine after the engine has been started.

In testimony whereof I have hereunto set my hand, at Los Angeles, California, this 9th day of October, 1906.

HENRY C. ROYER.

In presence of—

ARTHUR P. KNIGHT,
FRANK L. A. GRAHAM