

F. C. MASON.
IGNITION TIMER FOR INTERNAL COMBUSTION ENGINES.
APPLICATION FILED JUNE 19, 1909.

966,034.

Patented Aug. 2, 1910

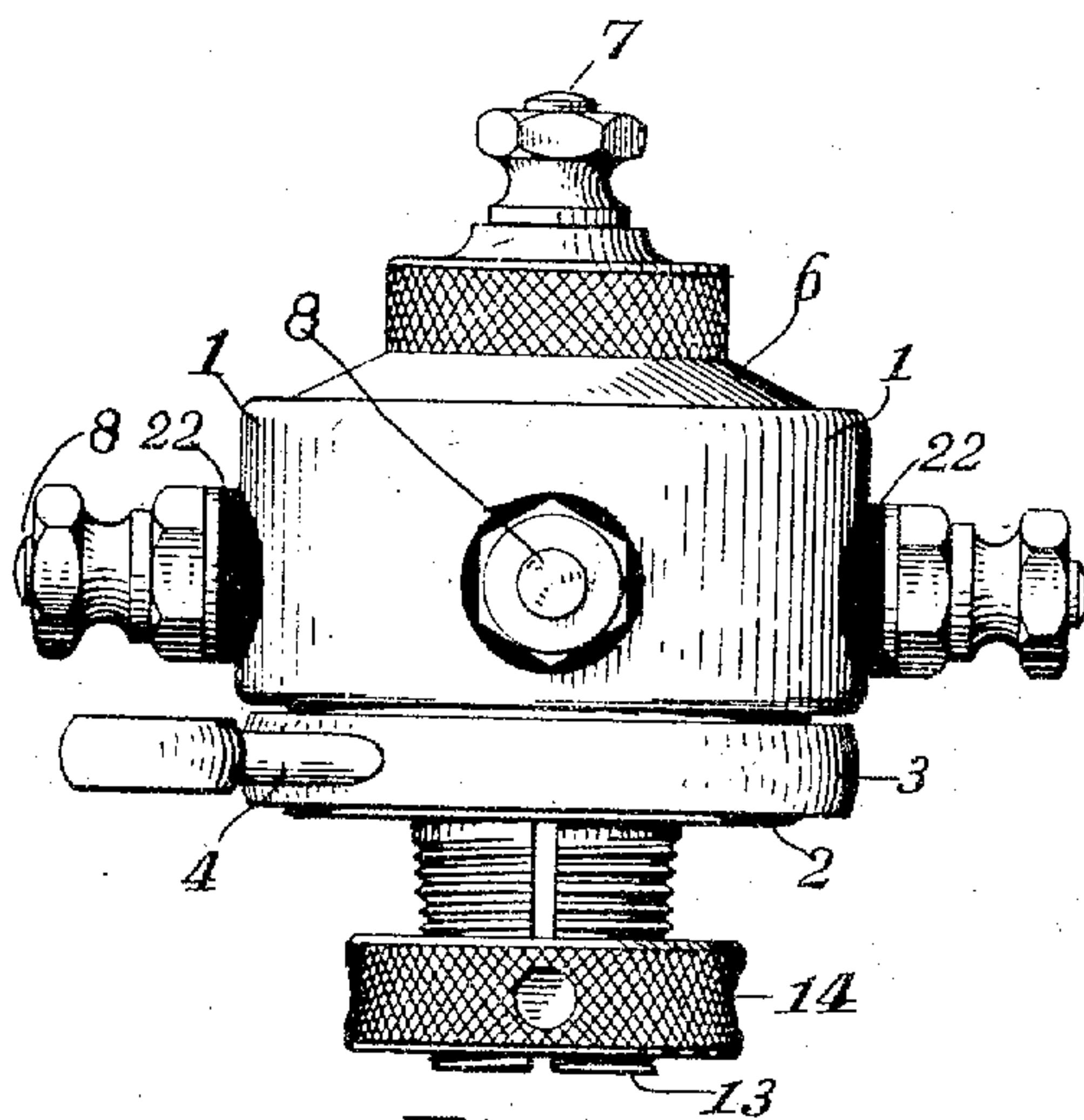


Fig. 1.

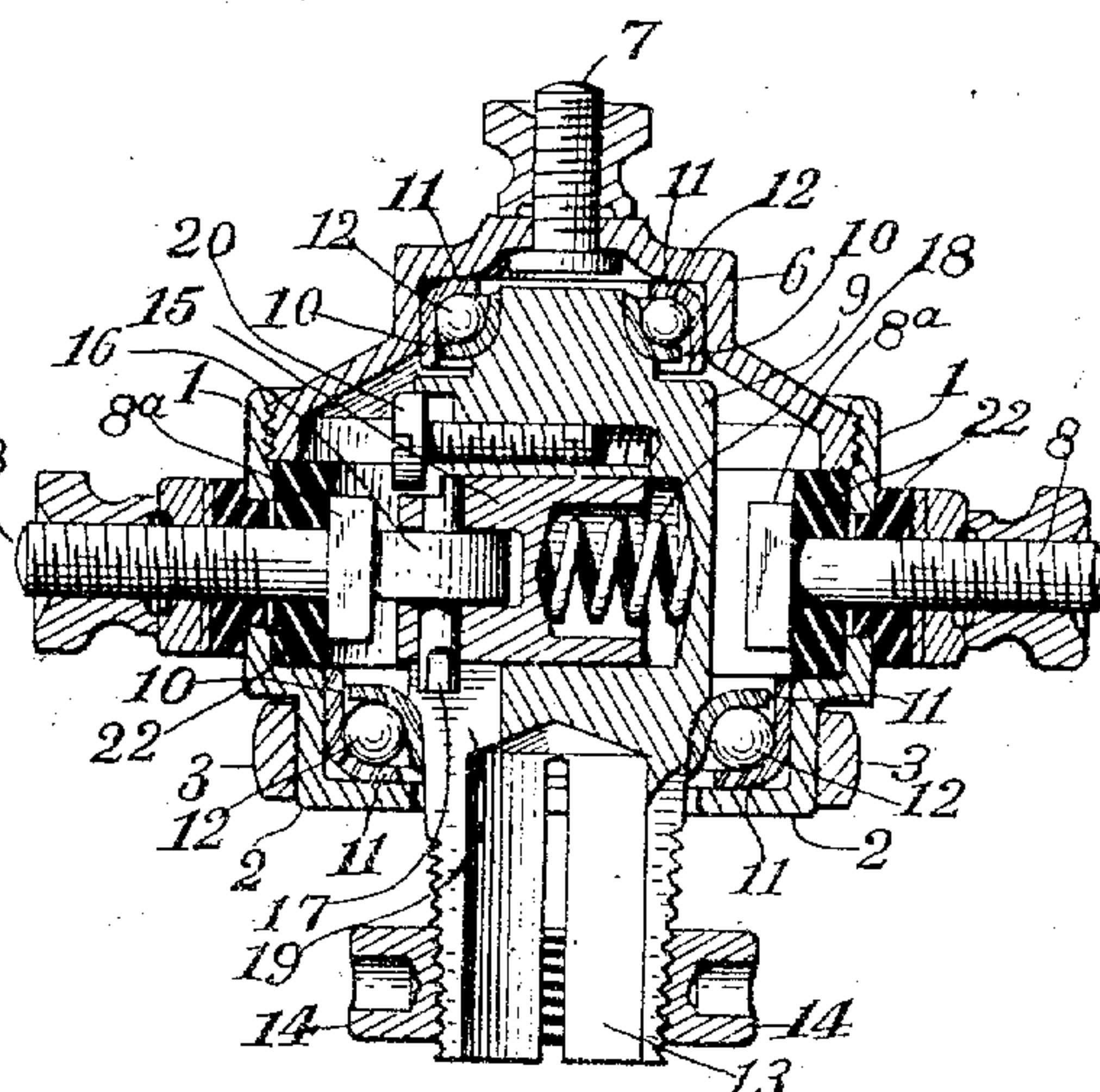


Fig. 2.

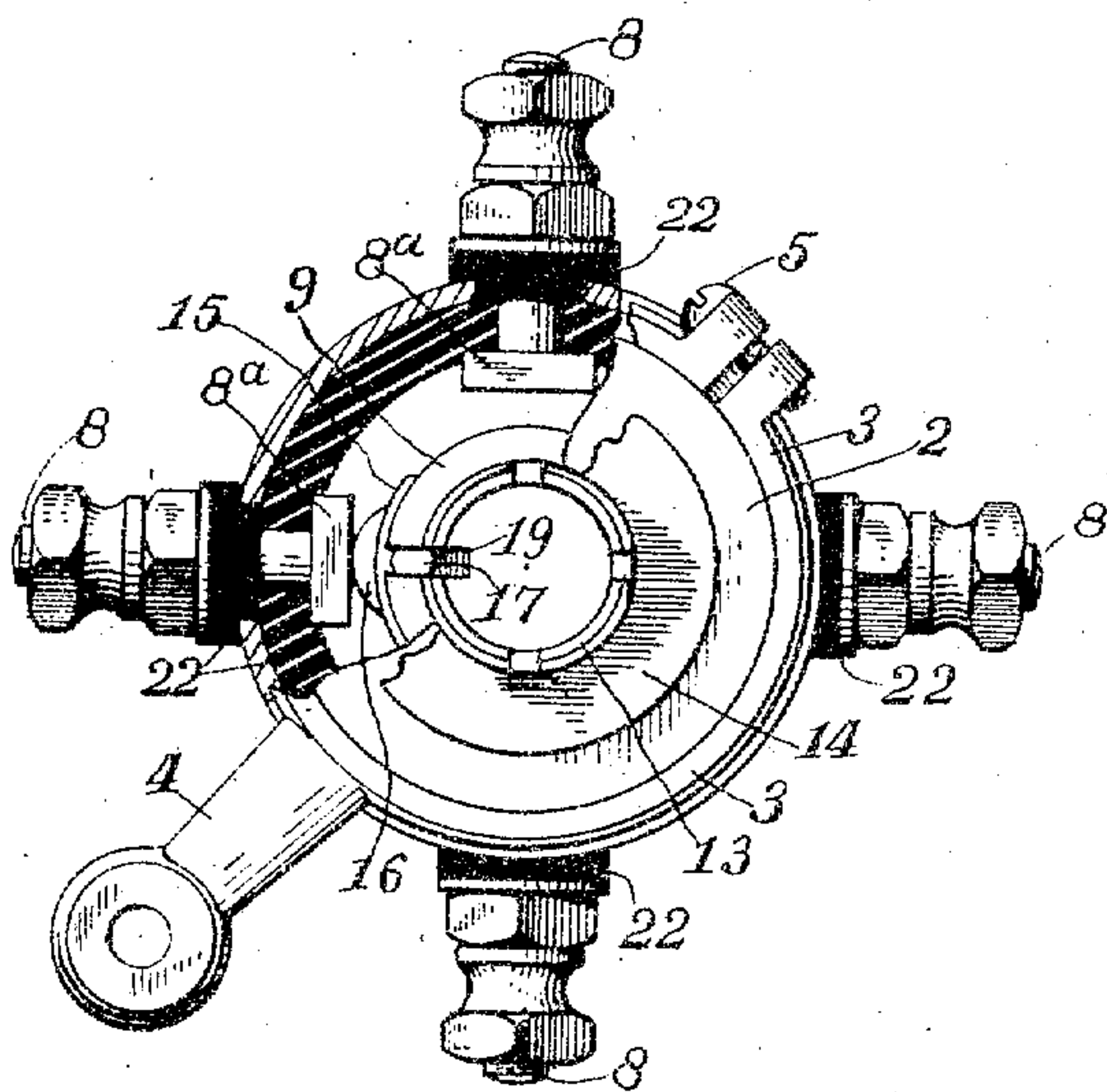


Fig. 3.

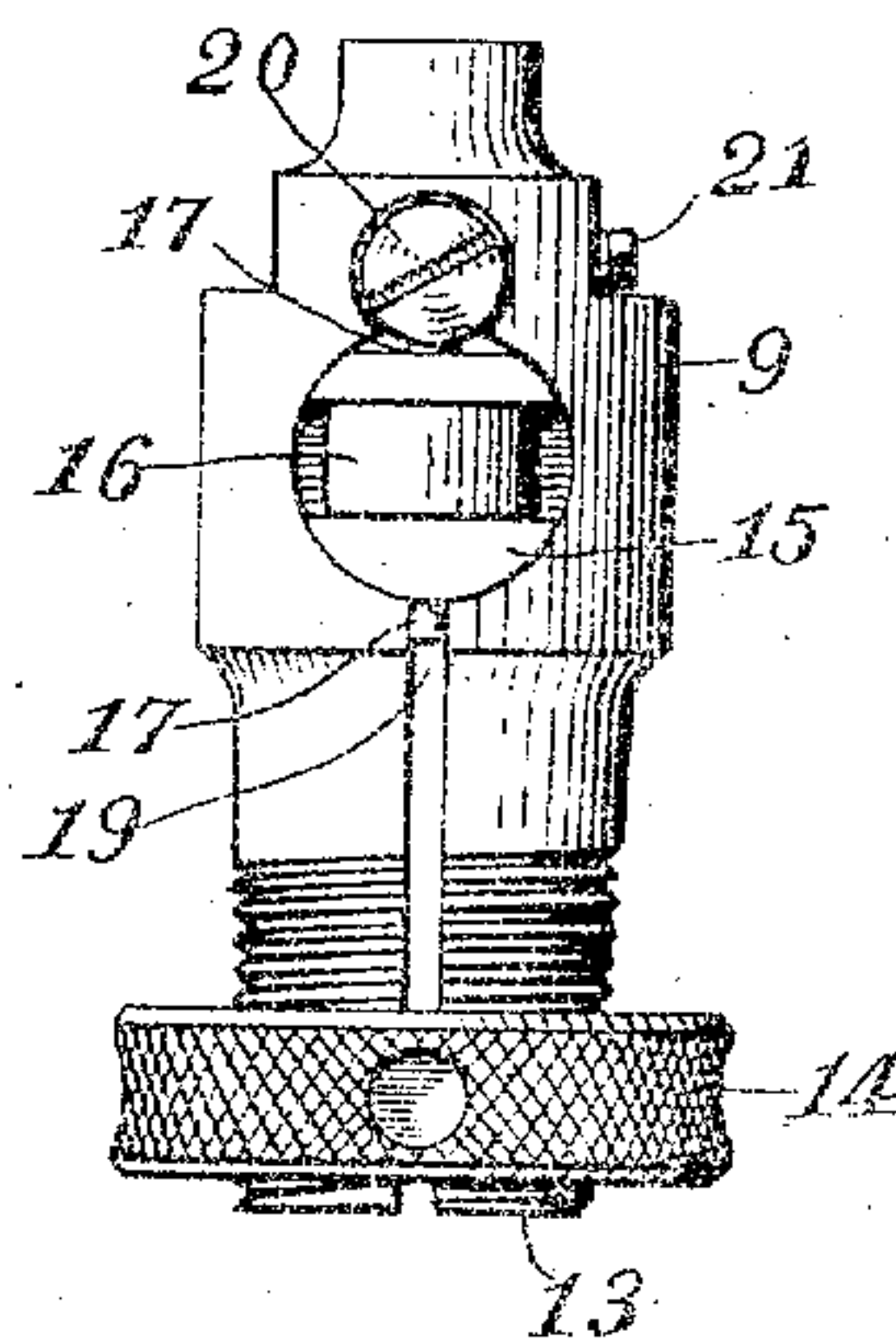


Fig. 4.

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IGNITION-TIMER FOR INTERNAL-COMBUSTION ENGINES.

966,034.

Specification of Letters Patent.

Patented Aug. 2, 1910.

Application filed June 10, 1909. Serial No. 503,253.

To all whom it may concern:

Be it known that I, FRANCIS C. MASON, a citizen of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Ignition-Timers for Internal-Combustion Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in ignition timers for internal combustion engines, and its object is to provide the same with various new and useful features, as will more fully appear by reference to the accompanying drawings, in which:

Figure 1. is a side elevation of a device embodying my invention; Fig. 2. a vertical section of the same through the axis thereof; Fig. 3. an end elevation of the same with parts broken away; and, Fig. 4. a detail of the rotary member, shown in elevation.

Like numbers refer to like parts in all of the figures.

1 represents a cylindrical case, fully open at the upper end and having a smaller opening in the axis of the lower end to permit the extension of the rotating member to project therethrough and also having a chamber 2 of reduced diameter to receive ball bearings, and upon this reduced portion is adjustably mounted a ring 3 for which adjustment the ring is divided at one side and connected by a screw 5. Projecting radially from this adjustable ring is an arm 4 to adjust the device to advance or retard the spark in the usual way.

6 is a cap detachably inserted in the open upper end of the case and having a central chamber to contain a ball bearing and provided at the axis with a binding screw 7 to attach the negative or ground conductor.

8 represents four equidistant binding posts extending radially through the case and insulated therefrom by suitable material 22, which posts constitute terminals for the various ignition circuits. These binding posts are provided at their inner ends with heads having flat inner surfaces, preferably rectangular or square, these inner surfaces being plane surfaces each arranged in a plane corresponding to the chord of an arc of a circle concentric with the axis of the case, said circle being of less diameter than the inner

surface of the insulation 22, whereby the roller 16 will not engage the said insulation.

9 is a cylindrical body rotative within the axis of the case and having mounted thereon, cones 10, the cones at the upper end being smaller and within the recesses of the cap, and the cone at the lower end being larger and within the reduced portion or chamber 2 of the case. Within these chambers in the cap and case are ball cups 11, and balls 12 are inserted between the cups 11 and cones 10, whereby ball bearings are provided for the body 9 near its respective ends. Integral with this body and projecting outside of the case a suitable distance, is a tubular extension 13 longitudinally divided at intervals and provided with a tapered external thread, and 14 is a rotative collar internally threaded whereby the socket is clamped upon any suitable driving shaft (not shown).

15 is a transversely movable plug within an opening extending nearly through the body 9, and across the axis thereof. Journalled in a recess in this plug and projecting therefrom is a roller 16 to successively engage the inner surfaces of the heads 8^a as the body 9 rotates. Within a chamber in the axis of this plug and projecting therefrom oppositely to the roller 16 is a spring 18, which yieldingly moves the plug and roller radially outward. This outward movement is limited and adjusted to be more or less by an adjustable stop, consisting of a screw 20, which screw is prevented from displacement by a set screw 21 engaged therewith. By adjusting the screw 20 outward or inward, the roller 16 will be projected by the spring to a greater or less extent from the axis of the body 9 and the surface of each head being chordal to the path of the roller the latter will contact the head earlier and later or throughout a larger arc of rotation the farther outward it is allowed to project, the time of contact with the heads 8^a is thereby increased, and the opposite effect is accomplished by adjusting the screw 20 inward. The duration of the ignition spark can thus be determined at pleasure by adjustment of this stop. This roller 16 is journalled on a pin 17, having flattened sides near one end, which end projects from the plug and moves radially in a slot 19, which is a prolongation of the separating slot of the tubular extension 13. The flattened sides of the pin 17 prevent this pin from turning about its axis, and the head of the screw 20

overhangs within a recess in the side of the plug 15 and engages the bottom of this recess to limit the movement of the plug.

What I claim is:

1. An ignition timer, comprising a case, insulated terminals projecting through the case and having plane inner surfaces chordal to the axis of the case, a rotative body in the axis of the case, a transversely movable plug in the rotative body, a spring to move the plug outward, an adjustable stop to limit and adjust said outward movement, and a roller projecting from the plug and successively engaging the terminals when the body is rotated.

2. An ignition timer, comprising a case, insulated terminals projecting through the case and having plane inner surfaces chordal to the axis of the case and equi-distant therefrom, a rotative body in the axis of the case, a movable plug arranged transversely of said body and extending through the axis thereof, a spring in an axial chamber of the plug to move the plug radially of the body, a roller in the plug, a pin on which the roller is journaled, said pin having its end oppositely flattened and radially slidable in a slot in the body, and a radially adjustable stop

engaging the plug and limiting its outward movement.

3. An ignition timer comprising a cylindrical case, insulated terminals projecting radially through the periphery of the case at regular intervals and having plane inner surfaces chordal to a circle concentric with the axis of the case and projecting inward beyond the surface of the insulation, a rotative body in the axis of the case, a plug in said body extending through the axis of the body and radially movable therein, a spring to move the plug outward, an adjustable screw to limit said movement, a set screw to hold said adjustable screw, a roller in the plug and successively engaging the surfaces of the terminals, a pin in the plug on which the roller is journaled, said pin also having an oppositely flattened end slidable in a radial slot in the body, and means for attaching the rotative body to a shaft.

In testimony whereof I affix my signature in presence of two witnesses.

FRANCIS C. MASON.

Witnesses:

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LUTHER V. MOULTON.