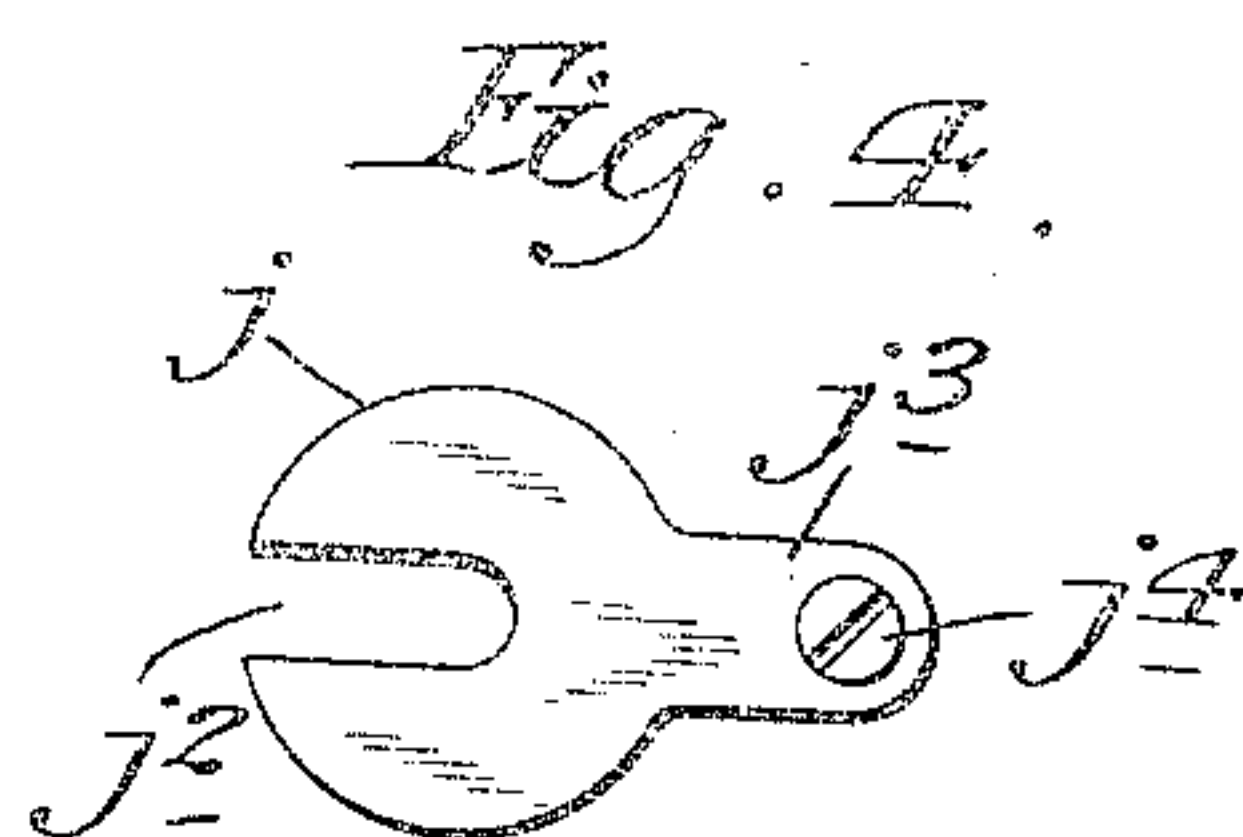
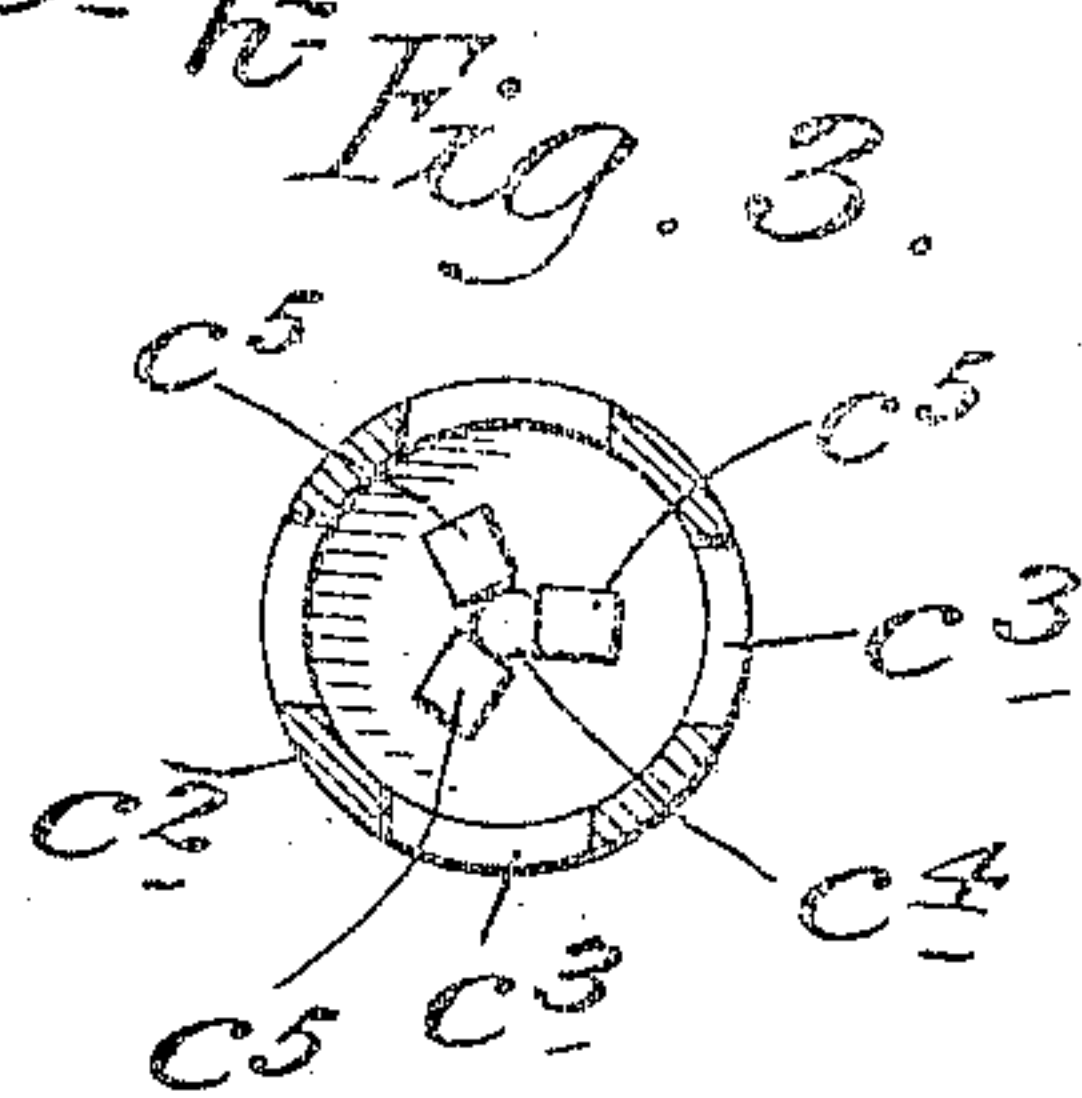
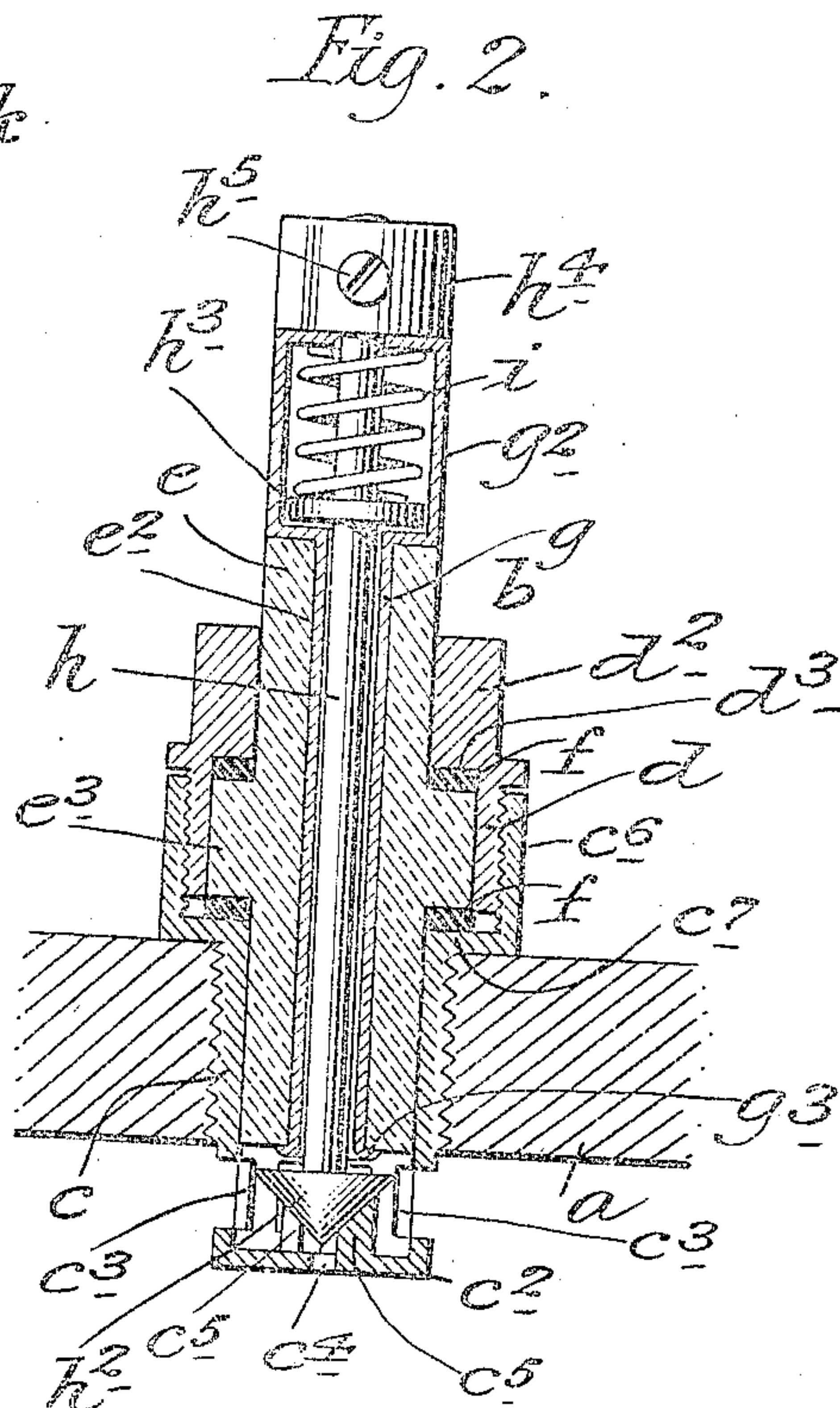
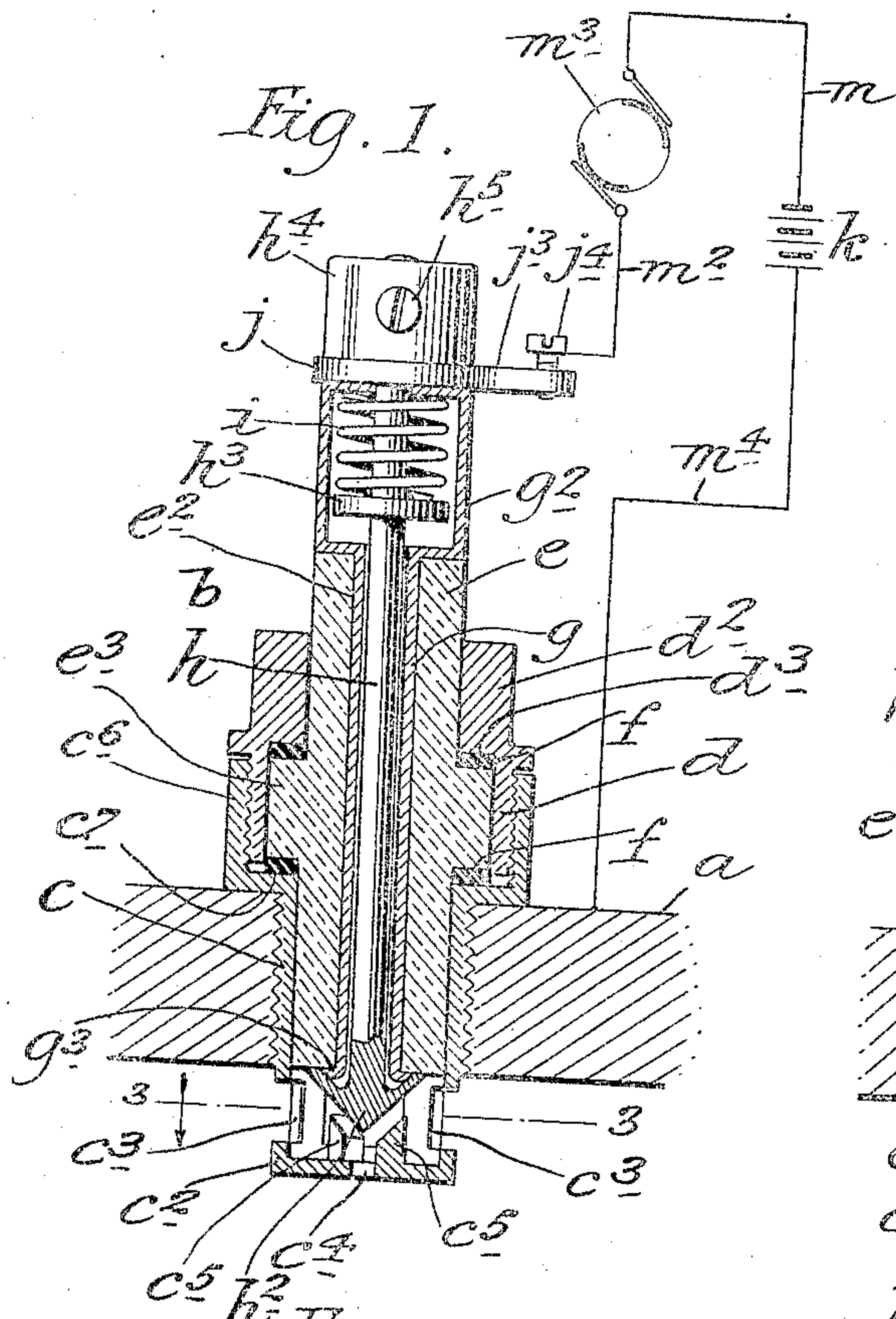


C. H. STONEBRIDGE.
SPARKING DEVICE.
APPLICATION FILED JAN. 18, 1910.

963,334.

Patented July 5, 1910.



WITNESSES:

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SPARKING DEVICE.

963,334.

Specification of Letters Patent.

Patented July 5, 1910.

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To all whom it may concern:

Be it known that I, CHARLES H. STONEBRIDGE, a citizen of the United States, and residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Sparking Devices, of which the following is a specification; such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to sparking plugs for use in connection with internal combustion engines, and the object thereof is to provide an improved device of this class which is simple in construction and operation and the construction of which is such that the devices forming the spark gap may be readily cleaned and kept in proper condition for use without removing the plug from the engine.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which;—

Figure 1 is a sectional view showing one of my improved sparking plugs connected with an engine; Fig. 2 a similar view showing the parts in a different position; Fig. 3 a section on the line 3—3 of Fig. 1, and;— Fig. 4 a side view of a detachable binding post device which I employ.

In the drawing forming part of this specification I have shown at *a* a part of the wall of a cylinder of an internal combustion engine, and at *b* my improved sparking plug.

In the construction of the sparking plug *b* I provide a screw threaded tubular plug *c*, which is adapted to be screwed into the wall of the engine in the usual manner and which, in the form of construction shown, is provided at its inner end with a tubular extension *c*², the sides of which are open as shown at *c*³, and the end portion of which is also provided with an opening *c*⁴ around which are inwardly directed sparking devices *c*⁵ which are arranged in the form of a circle and three of which are preferably employed and the inner ends of which are beveled inwardly as clearly shown in Figs. 1 and 2.

The outer end of the screw threaded plug *c* is provided with an enlarged annular head *c*⁶ in which is an annular shoulder *c*⁷, and screwed into the annular head *c*⁶ is a threaded sleeve *d* provided with an annular head *d*² which forms an internal annular

shoulder *d*³, and the head *d*² may be made in the form of a nut so as to facilitate the operation of screwing the sleeve *d* into the head *c*⁶ and removing said sleeve when desired. I also provide an insulating plug *e*, which is tubular in form or provided with a central longitudinal bore *e*² and said insulating plug *e* is provided centrally with an annular enlargement *e*³ and is fitted into the parts *c* and *d* as clearly shown in Fig. 1. In assembling these parts the insulating plug *e* is first inserted into the tubular plug *c* and the sleeve *d* is then screwed into position and this annular enlargement *e*³ of the insulating plug *e* between the shoulders *c*⁷ and *d*³ of the parts *c* and *d*, and between said shoulders and the annular enlargement *e*³ of said parts are preferably placed packings *f*.

The insulating plug *e* projects outwardly from the annular head *d*² of the sleeve *d* and passed through the central bore of said plug is a tube *g*, the outer end of which is provided with a cylindrical casing *g*² which forms a head for said tube, and passing through and movable through the outer end of the head *g*² of the tube *g* and through said tube is a rod *h*, the inner end of which is provided with a conical head *h*², the apex of which is in a line with the center of the circle around which the sparking devices *c*⁵ are placed.

The inner end of the tube *g*, in the form of construction shown is provided with an annular bead *g*³ which holds it in the insulating tubular plug *e* and the base of the conical head *h*² of the rod *h* is provided with a corresponding annular groove adapted to receive said bead.

The rod *h* is provided within the head *g*² of the tube *g* with a collar *h*³ between which and the outer end of said head *g*² is placed a spiral spring *i*, and the outer end of the rod *h* is provided with a head *h*⁴ which is preferably cylindrical in form and secured to said rod by a screw *h*⁵. I also provide a contact device *j*, which in the construction shown, is made in the form of a circular plate provided at one side with a radial slot or opening *j*² and at the opposite side with a radial extension or arm *j*³ with which is connected a screw or binding post *j*⁴. I have also indicated at *k* in Fig. 1, a battery with which is connected a wire *m*, and another wire *m*² is connected with the binding post *j*⁴ and said wires *m* and *m*² are connected with an ordinary timer *m*³, and a wire *m*

connects the battery k with the engine or with the wall a of the cylinder of the engine or with the ground.

The operation will be readily understood from the foregoing description when taken in connection with the accompanying drawing and the following statement thereof. Whenever it is desired to place the device in operation the rod h is pulled outwardly by means of the head h^4 and the contact device j is passed between said head and the head g^2 of the tube g , as clearly shown in Fig. 1, and in this operation the rod h passes into the slot or opening j^2 in the contact device or plate j . This holds the rod h in its outermost condition against the operation of the spring i and as shown in Fig. 1, and as the current passes through the circuit formed by the parts $k, m, m^2, j, h, c^5, c^2, c$ and a , and the timer m^3 is operated in the usual manner, the necessary sparks will be produced in the spark gap or gaps between the parts h^2 and c^5 as will be readily understood. Whenever it is desired to clean the adjacent surfaces of the parts h^2 and c^5 the contact plate or device j is withdrawn, the circuit is broken, the spring i forces the rod h inwardly as shown in Fig. 2 so that the head h^2 of said rod will come in connection with the sparking device c^5 , and by rotating said rod by means of the head h^4 thereof the said surfaces may be thoroughly cleaned and placed in proper operative condition, and by again inserting the contact device or plate j into the position shown in Fig. 1 the device will again be in condition for operation.

It will be understood that the inner end c^2 of the screw threaded plug c forms simply a support or supports for the sparking contacts c^5 and this support or supports may be made in any desired manner. It will also be understood that the screw threaded tubular plug c with its head c^6 , and the threaded sleeve d with its head d^2 constitutes a casing or holder for the insulating plug e , and modifications of these parts as well as of other parts of the device may be made, within the scope of the appended claims, without departing from the spirit of my invention or sacrificing its advantages.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. A sparking plug for internal combustion engines, comprising a casing or holder having a screw threaded extension provided with circularly arranged sparking contacts, an insulating tubular plug mounted in and passing through said casing or holder, a rod passing through said insulating plug and provided at its inner end with a conical

head, said rod being movable longitudinally through said plug, a tension device for forcing said rod inwardly and a detachable contact device provided with a binding post and adapted to hold said rod in its outermost position.

2. A sparking plug for internal combustion engines, comprising a casing or holder adapted to be screwed into the wall of a cylinder of said engine and provided at its inner end with sparking devices arranged in a circle, an insulating tubular plug mounted in said casing or holder and passed through, a rod movable longitudinally through said insulating plug and provided at its inner end with a conical head adapted to operate in connection with said sparking devices, a tension device forcing said plug inwardly and a detachable contact device adapted to hold said rod in its outermost position.

3. A sparking plug for internal combustion engines, comprising a suitable holder adapted to be connected with a wall of a cylinder of the engine and extending there-through and provided at its inner end with sparking devices, a tubular insulating plug mounted in said holder and extending there-through, a rod passed through said insulating plug and provided at its inner end with a head adapted to operate in connection with said sparking devices, a tension device for forcing said plug inwardly and a contact device adapted to be detachably connected with the outer end of said rod and to hold said rod in its outermost position, said rod being also provided at its outer end with a head whereby it may be rotated.

4. A sparking plug for internal combustion engines, comprising a casing or holder adapted to be secured in a wall of a cylinder of the engine, and provided at its inner end with a suitably supported sparking device, an insulating tubular plug mounted in said casing or holder, a rod passing through said insulating plug and the inner end of which is adapted to operate in connection with said sparking device, said rod being movable longitudinally through said plug, and a detachable contact device adapted to hold said rod in its outermost position.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 14th day of January 1910.

CHARLES H. STONEBRIDGE.

Witnesses:

C. E. MULREANY,
B. M. RYERSON.