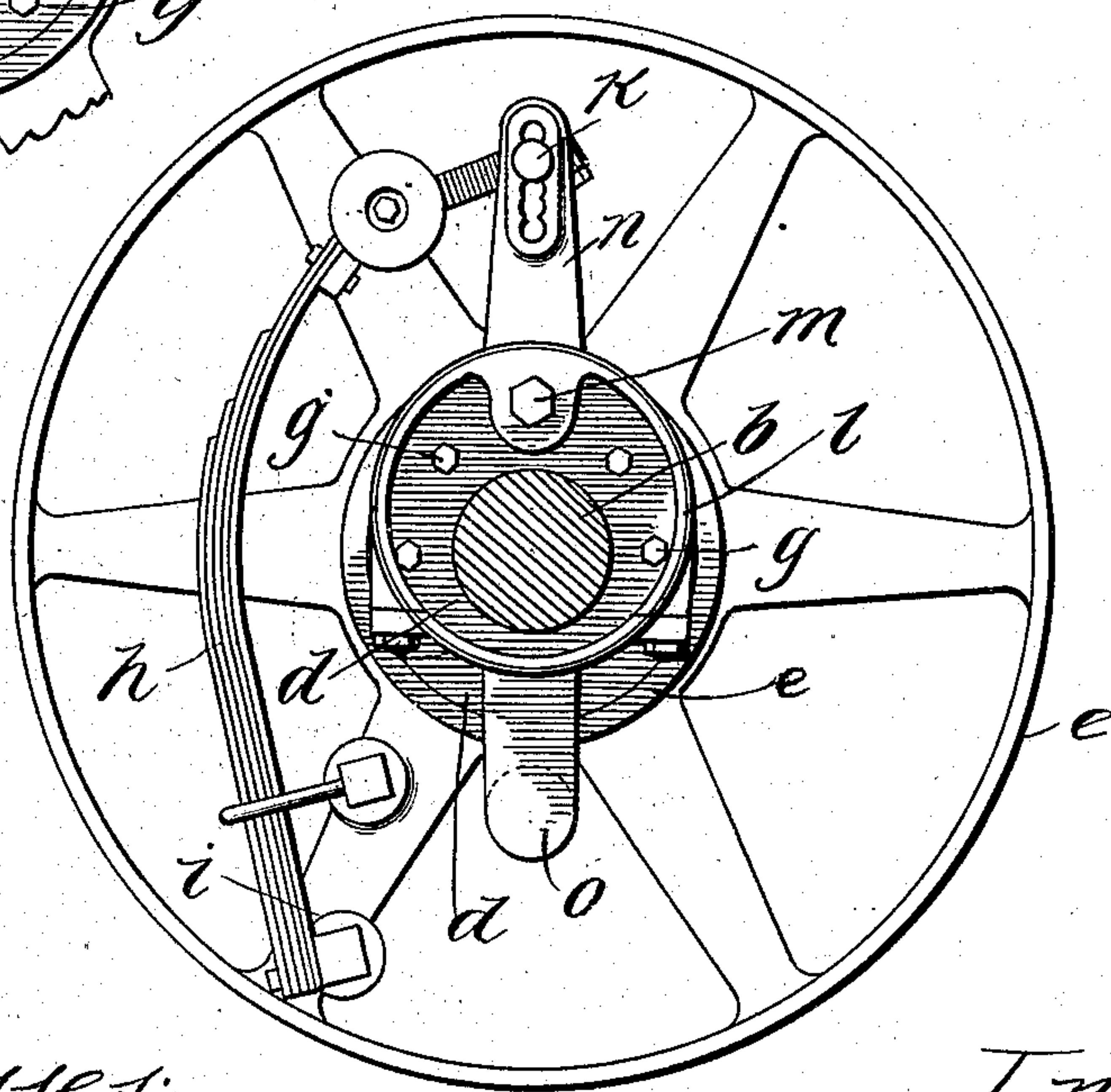
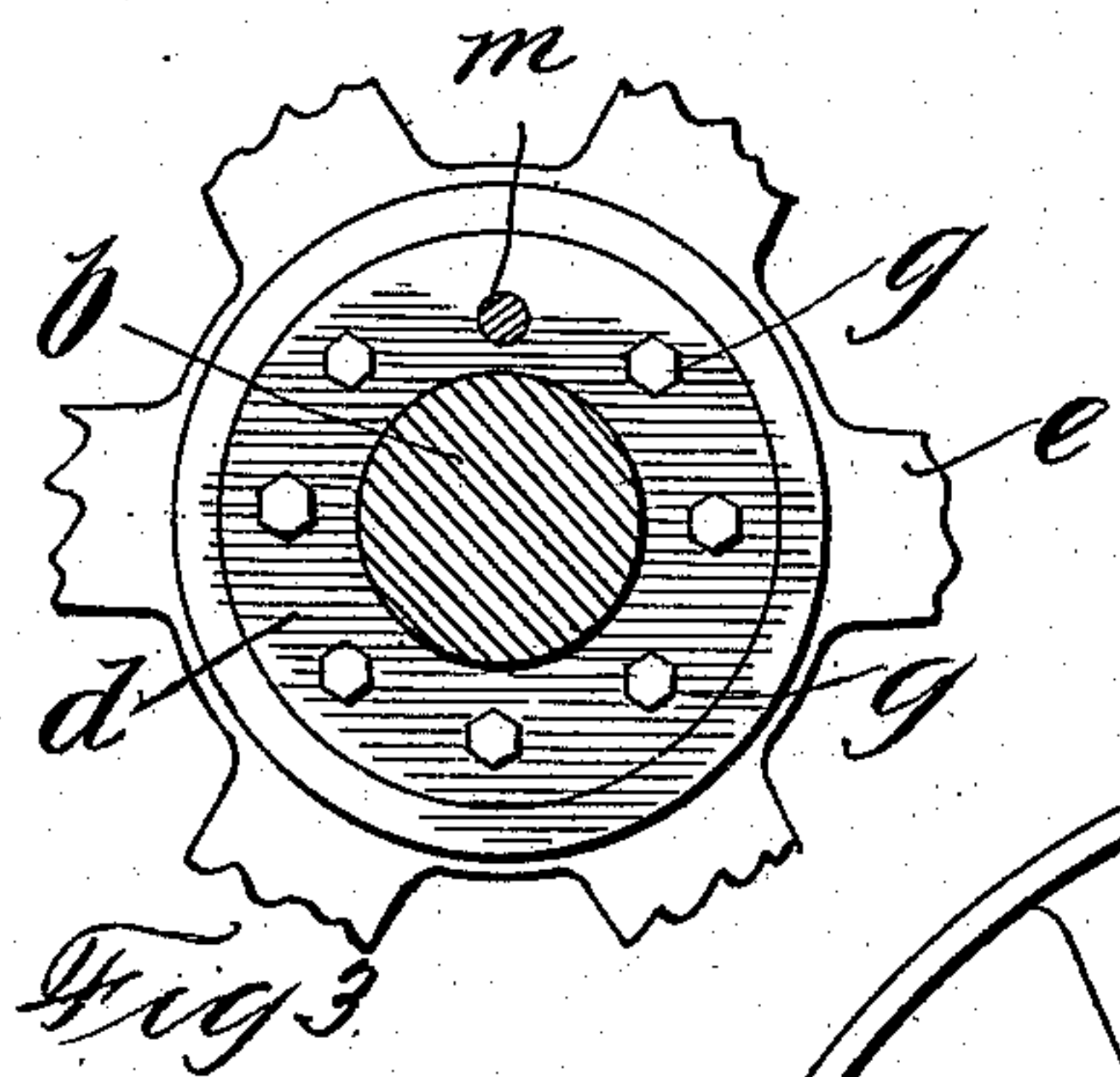
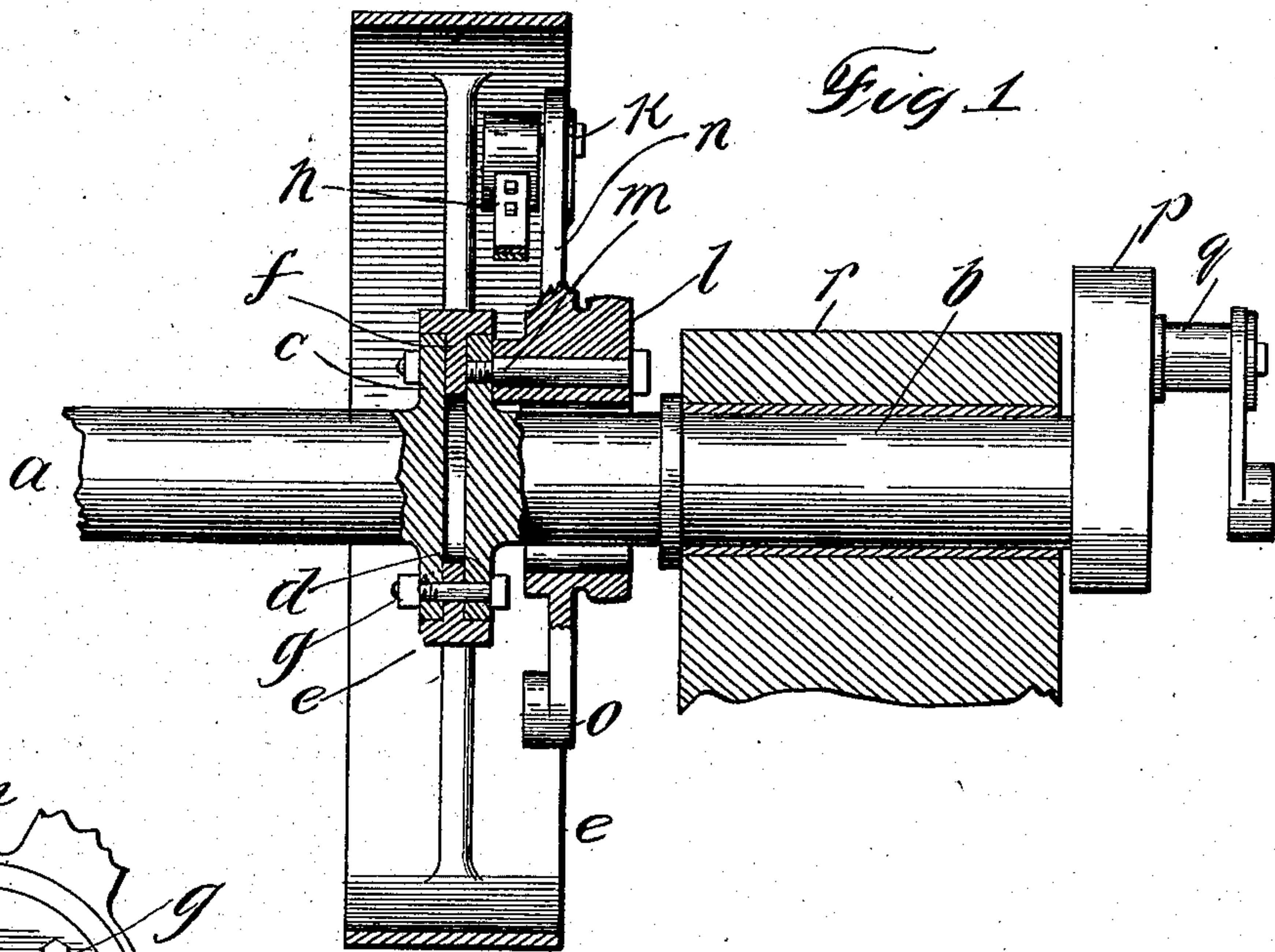


H. L. IDE.
ENGINE.

APPLICATION FILED DEC. 14, 1907.

900,100.

Patented Oct. 6, 1908.



Witnesses:
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UNITED STATES PATENT OFFICE.

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ENGINE.

No. 900,100.

Specification of Letters Patent.

Patented Oct. 6, 1908.

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To all whom it may concern:

Be it known that I, HARRY L. IDE, citizen of the United States, residing at Springfield, in the county of Sangamon and State of Illinois, have invented a certain new and useful Improvement in Engines, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to engines, and has several advantages and objects in view, as will appear by the following description of the preferred embodiment of my invention shown in the accompanying drawing, in which—

Figure 1 is a view in elevation, mainly in section, of a portion of an engine constructed in accordance with the invention. Fig. 2 is a view of parts of the mechanism shown in Fig. 1, taken in a direction at right angles to that in which Fig. 1 is taken. Fig. 3 is a detail view of a part of the mechanism shown in Figs. 1 and 2.

Like parts are indicated by similar characters of reference throughout the different figures.

In accordance with my invention, the crank shaft of the engine is formed in two separable sections *a b*, respectively provided with enlargements *c d* integrally formed therewith and laterally projecting therefrom. These enlargements are desirably in the form of circular flanges that are set face to face when the shaft sections are to be assembled. A governing element support *e*, desirably in the form of a wheel, is designed for interposition between the flanges *c d* and is desirably provided with inset recesses, as indicated most clearly in Fig. 1, for receiving the flanges *c d*, said recesses having a common bottom portion *f*, which is the part of the governing element support that I interpose between the flanges. Clamping bolts *g* are passed through the flanges and also preferably through the bottom portion *f* of the governing element support, these clamping bolts serving to clamp the flanges and the governing element support firmly to each other. An element of the engine governor is illustrated at *h* and is of a kind which is well-known by those skilled in the art. I do not limit myself to the precise type of governor illustrated. This governing element *h*

is mounted at *i* upon the support *e* and has connection at *k* with a valve-controlling element shown in the present embodiment of the invention in the form of a swinging eccentric *l* mounted to rotate upon a pivotal shaft *m* screwed into one of the flanges, *d*. The eccentric *l* for purpose of having operative interconnection with the governing element, is provided with a bar *n* forming a part of the eccentric structure and having connection, as stated, with the governing element at *k* and provided with a counterbalancing weight *o*. This eccentric is made in two pieces in order that it may readily be placed over the shaft. These pieces are bolted together.

The engine indicated is of the side crank type, the crank *p* being indicated upon the end of the shaft section *b*, the crank being provided with a crank pin *q* and other adjuncts that need not be mentioned. A bearing *r* is indicated between the crank *p* and the governing mechanism.

Many advantages of the novel construction illustrated and herein claimed will be readily apparent to those skilled in the art.

With the usual construction hitherto employed, the shaft is made entirely of one piece, even where it is employed for driving dynamos. As a consequence, it has been customary to make the entire shafts to special dimensions to suit the requirements of the generator. By means of the construction herein set forth, the section of the shaft (*b*) carrying the crank, may be of standard construction, and the companion section (*a*) which is to carry the armature of the generator, may be constructed to suit the generator to which it is to be adapted. The shaft of this construction, in combination with a governing element support held between the flanges of the sections of the shaft, avoids the necessity of using a split governor pulley on a side crank engine, such pulleys having hitherto been split for the purpose of enabling them to be readily handled, without removing the armature from the shaft. By means of my invention, the two shaft sections need merely be uncoupled and separated, in order to remove the governing element support. Furthermore, by my improved arrangement of the governing element support in combination with the sectional shaft, said support or pulley is not likely to

run out of true with respect to the shaft, which hitherto has happened because of loose or improper fit of the pulley hub upon the shaft.

5 It will be seen that the governor pulley in my present construction becomes so rigidly fixed with respect to the shaft when the bolts *g* are properly tightened, as to render the pulley absolutely rigid with respect to the
10 shaft sections. It will also be seen that the governing element and the governor pulley may, with the greatest facility, be erected or dismantled. By mounting the governor eccentric upon the pin *m* attached to a shaft
15 flange, great accuracy is insured in the location and maintenance of the relative position of the engine crank and eccentric.

It will be apparent that there are great advantages which result from mounting the
20 eccentric upon an enlargement integrally formed with the shaft. The force imparted by an eccentric when driving a valve and its connections, acts in a line passing approximately through the center of the eccentric.
25 Consequently, the nearer the pivotal point of support for the eccentric is brought to the center of the eccentric, the shorter will be the lever arm upon which it acts and the less will be the moment tending to disturb the
30 position of the eccentric and the more stable will be the eccentric for a given weight and power of the governor. It will be seen that for a given degree of stability for the eccentric, a lighter governor may be used when the
35 pivotal point of support for the eccentric is brought closer to the center of the eccentric. It will further be seen that the shorter the lever arm from the pivotal point of support to the center of the eccentric, the less will be
40 the side play of the eccentric in a direction lengthwise of the engine shaft for a given degree of ease of fit in the pivotal bearing of the eccentric.

The desired close approximation of the
45 pivotal support for the eccentric and the center of the eccentric is readily obtained by making the mounting for the eccentric an integral enlargement of the shaft.

All of the advantages above pointed out
50 are securable when the pivotal or mounting point of the eccentric is provided upon an enlargement integrally formed with the engine shaft, as must be apparent.

There are other advantages in my improved construction which need not be herein
55 particularly set forth, and as it is obvious that changes may readily be made in the preferred embodiment of my invention herein illustrated, without departing from the spirit
60 of the invention, I do not wish to be limited to the precise construction shown, but,

Having thus described my invention, I claim as new and desire to secure by Letters Patent the following:—

65 1. In an engine, the combination with a

crank shaft formed in separable sections, the opposed ends of the sections having flanges, of a governing element support formed with inset recesses to receive said flanges, said recesses having a common bottom portion in-
70 terposed between the flanges, clamping bolts passing through the flanges and serving to clamp the said bottom portion in place, thereby separably to secure the governing
75 element support in place upon the shaft, a governing element carried upon said support, and an eccentric in operative connection with said governing element and carried by one of said flanges.

2. In an engine, the combination with a
80 crank shaft formed in separable sections, the opposed ends of the sections having flanges, of a governing element support formed with inset recesses to receive said flanges, said recesses having a common bottom portion in-
85 terposed between the flanges, clamping bolts passing through the flanges and serving to clamp the said bottom portion in place, thereby separably to secure the governing
90 element support in place upon the shaft, a governing element carried upon said support, and an eccentric in operative connection with said governing element.

3. In an engine, the combination with a
95 crank shaft formed in separable sections, the opposed ends of the sections having enlargements, of a governing element support interposed between said enlargements, clamping bolts passing through the enlargements
100 and serving to separably secure the governing element support upon the shaft, a governing element carried upon said support, and an eccentric in operative connection with said governing element and carried by one of
105 said enlargements.

4. In an engine, the combination with a
crank shaft formed in separable sections, the opposed ends of the sections having enlargements, of a governing element support interposed between said enlargements, clamping
110 bolts passing through the enlargements and serving to separably secure the governing element support upon the shaft, a governing element carried upon said support, and an eccentric in operative connection with said
115 governing element.

5. In an engine, the combination with a crank shaft formed in sections, the opposed ends of the sections having separably united enlargements, of a governing element sup-
120 port separably secured to an enlargement, a governing element carried upon said support, and an eccentric in operative connection with said governing element and carried by one of said enlargements.
125

6. In an engine, the combination with a crank shaft formed in sections, the opposed ends of the sections having separably united enlargements, of a governing element sup-
130 port separably secured to an enlargement, a

governing element carried upon said support, and an eccentric in operative connection with said governing element.

7. In an engine, the combination with a crank shaft formed in sections, the opposed ends of said sections having separably united enlargements, of a governing element, and an eccentric in operative connection with said governing element and carried by one of said enlargements.

8. In an engine, the combination with a crank shaft formed in separable sections, the opposed ends of the sections having enlargements, of a governing element support inter-

posed between said enlargements, clamping bolts passing through the enlargements and serving to separably secure the governing element support upon the shaft, a governing element carried upon said support, and a valve-controlling element in operative connection with said governing element.

In witness whereof, I hereunto subscribe my name this tenth day of December A. D., 1907.

HARRY L. IDE.

Witnesses:

ADA L. AYERS,
FRED. D. SULLOWAY.