

H. SCHAAKE & J. T. COWIE.
SPARKER MECHANISM FOR INTERNAL COMBUSTION ENGINES.
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934,842.

Patented Sept. 21, 1909.

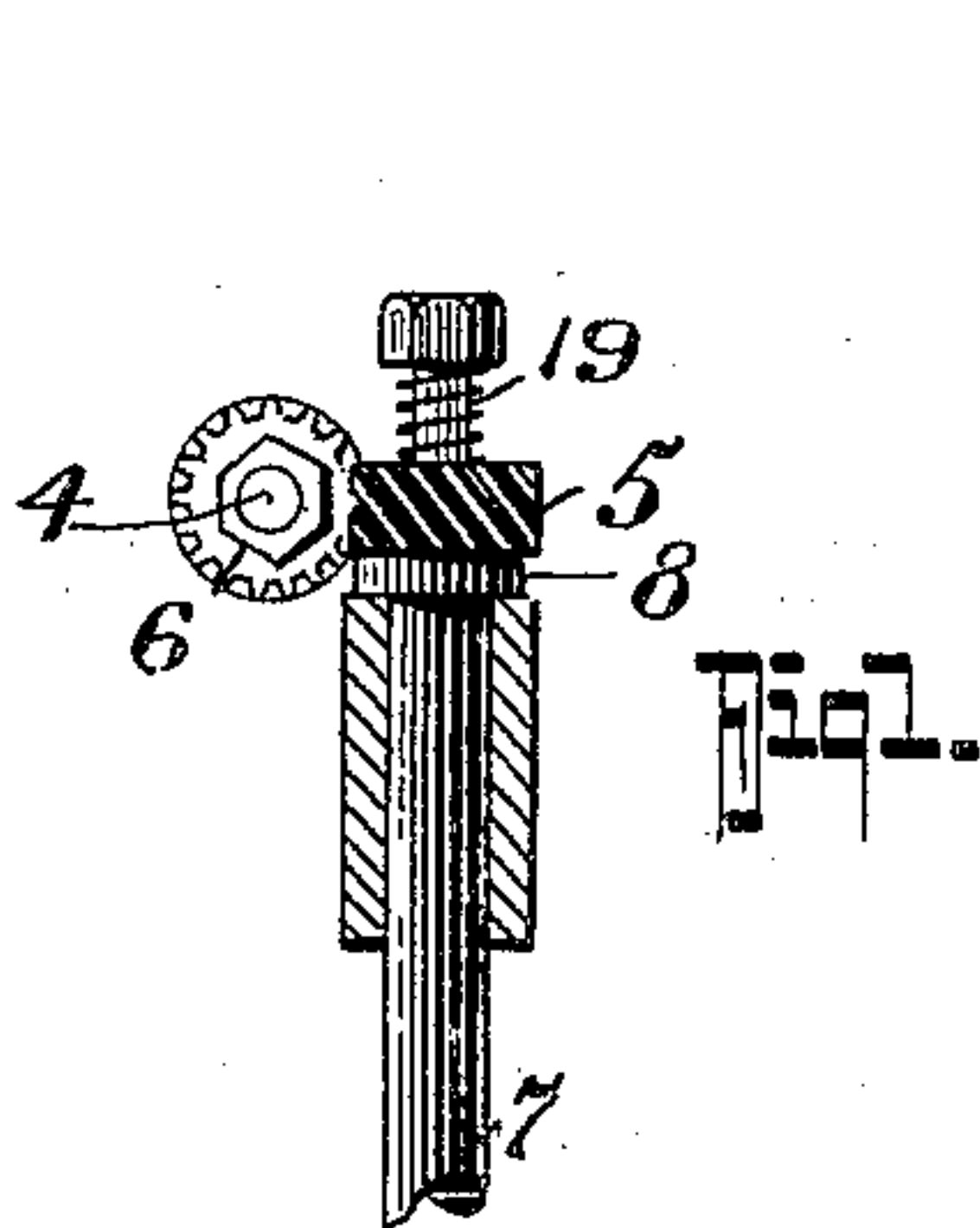


Fig. 1.

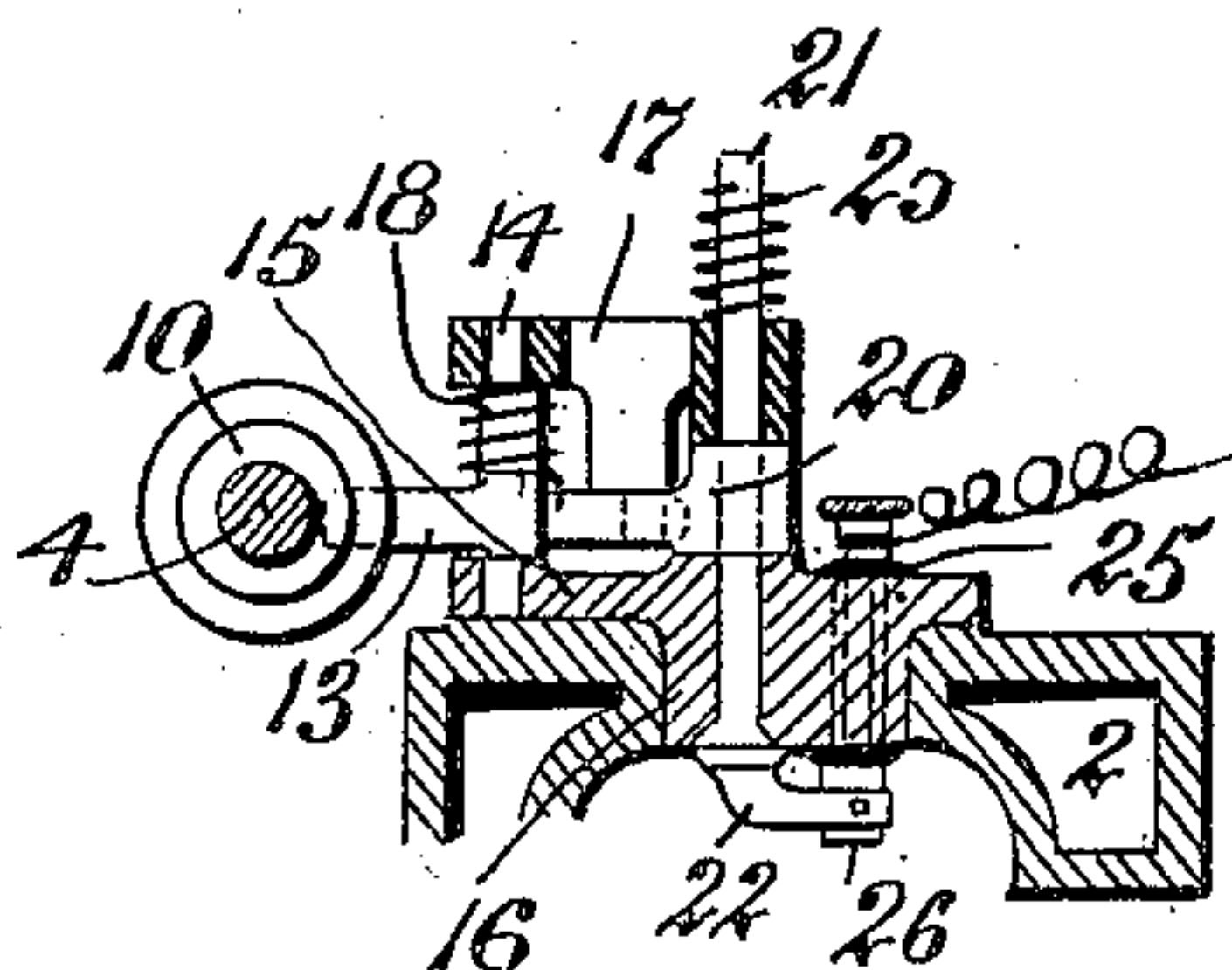


Fig. 2.

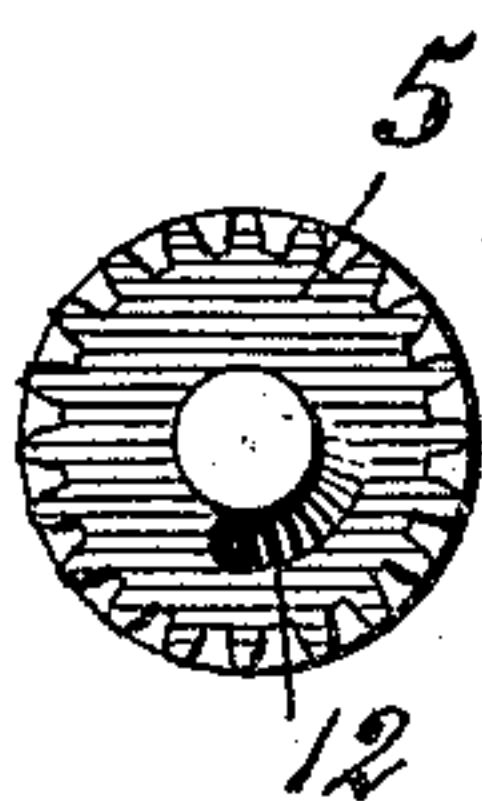


Fig. 4.

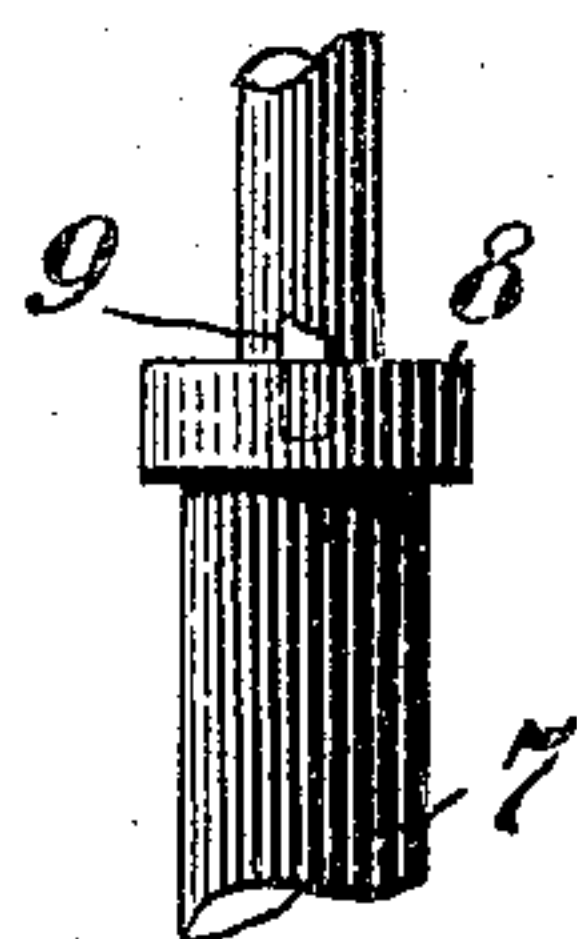


Fig. 5.

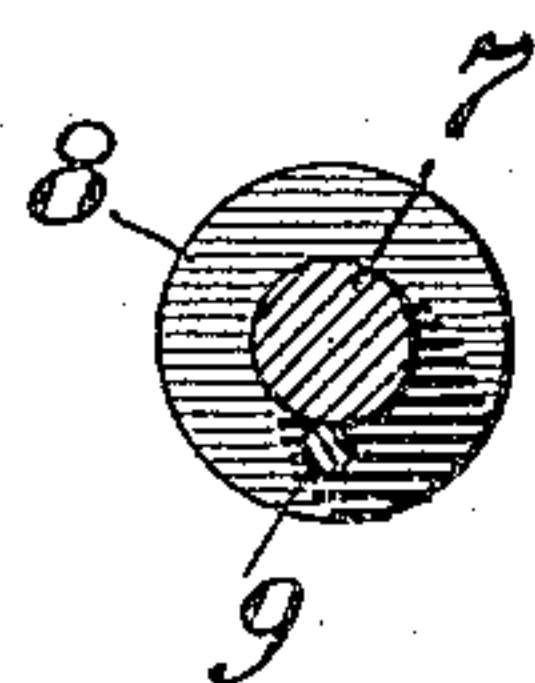


Fig. 6.

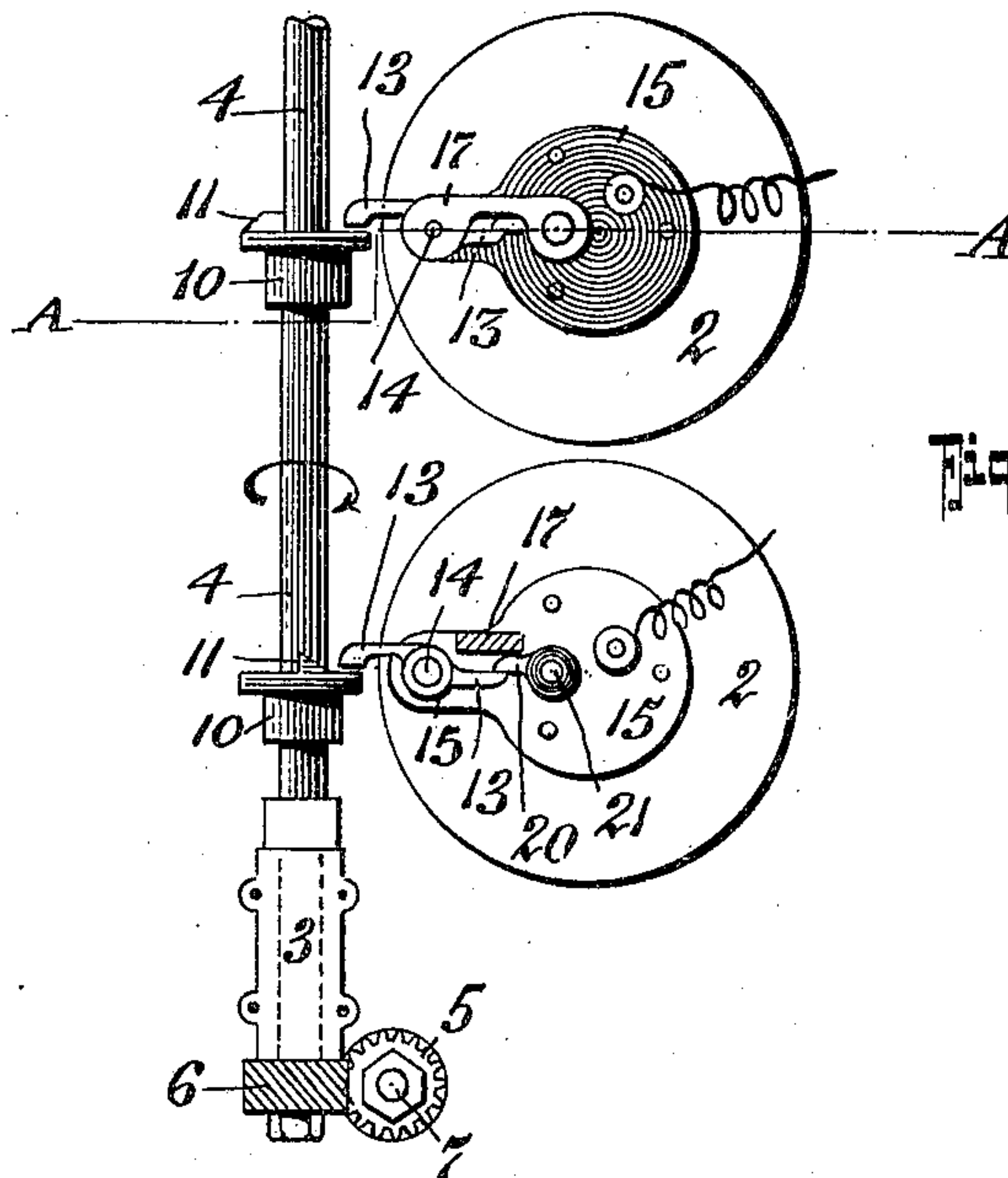


Fig. 3.

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SPARKER MECHANISM FOR INTERNAL-COMBUSTION ENGINES.

934,842.

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To all whom it may concern:

Be it known that we, HENRY SCHAAKE and JOHN T. COWIE, citizens of the Dominion of Canada, residing at New Westminster, in the Province of British Columbia, Canada, have invented a new and useful Improvement in Sparker Mechanisms for Internal-Combustion Engines, of which the following is a specification.

This invention relates to the mechanism by which the movable electrode of the sparker of an internal combustion engine is moved into contact with the stationary or insulated electrode, and is designed to provide in a simple and effective manner against the mechanism being injured when the engine throws back owing to back firing in the cylinder.

There are also subsidiary features in the manner of mounting the mechanism on the sparker plug to which attention is drawn in the following specification, reference being made to the drawings by which it is accompanied, of which:

Figure 1 is an end elevation of the sparker mechanism drive adjacent to the cylinder heads, Fig. 2, a sectional elevation of the mechanism on the line A A in Fig. 3, Fig. 3, a plan, the T bearings of the lower cylinder sparker being removed, and Figs. 4, 5 and 6, enlarged details of the drive between the vertical and horizontal shafts.

In these drawings 2 represents the cylinder heads of the engine. Rotatable in bearings 3 adjacent to these heads is a horizontal shaft 4 which is driven by spiral gears 5 and 6 from a vertical shaft 7 which again is driven by spiral gears from the crank shaft of the engine.

On the horizontal shaft 4 opposite each cylinder head is a cam 10 which by an inclined face 11 and square drop (see the lower one in Fig. 3) operates the trip lever 13 of the movable electrode. The trip lever (see Fig. 2) is pivotally mounted at 14 between two bearings, one in the flange 15 of the sparker plug 16 and the other in one end of a T projection 17 from the same casting. A light coil spring 18 between the lever and its bearing holds the trip lever just clear of the normal face of the cam 10.

The stem 21 of the movable electrode is also supported not only in its bearing in the sparker plug, through which it passes, but externally in the other end of the T projection

17. The lower end of this stem 21 is bent as at 22 to form the movable electrode and outside of the plug 15 between the bearings is secured on the stem a short lever 20 in engagement with the other end of the trip lever 13.

The stationary or insulated electrode 25 passes through the spark plug and its anvil 26 within the cylinder is adjacent to the movable electrode 22.

A coil spring 23 secured between the upper end of the spindle 21 and its bearings serves not only to hold the movable electrode normally in contact with the anvil 26 of the fixed electrode, but also holds the valve at the lower end of the stem 21 against the underside of its bearing through the spark plug to prevent the escape of gas past the bearing.

This mechanism, though substantially the same as what is used in engines of this class is simple and compact in its arrangement, and as the mechanism of the movable electrode is all connected to the spark plug, its adjustment is not disturbed when for any reason the spark plug requires to be removed, and the provision of the double bearings for the trip lever and the movable electrodes efficiently supports these parts under wear. An essential feature however of the invention lies in the manner of driving the horizontal shaft 4 from the vertical shaft 7 to prevent a throw back of the crank shaft injuring the sparker mechanism, which it would do if the shaft 4 were to be moved backward and the square face of the incline 11 of the cam allowed to engage the trip lever 13. To guard against this possibility the spiral gear 5 is free to rotate and lift on the upper end of the shaft 7 and rests upon a collar 8 in which is a steel pin 9 beveled as shown in Fig. 5. The under or adjacent face of the gear 5, (see Fig. 4) is provided with a corresponding beveled notch 12. This pin 9 in engagement with the square face of the notch 12 will drive the gear 5 in the required direction, but if the shaft 7 turns in the opposite direction as in the case of a blow back it will not rotate the gear 5 or its connected shaft 4, as the gear will by the engagement of the inclined faces of pin and notch be merely lifted off its seat on the collar 8 against the resistance of a coil spring 19.

The drive is an efficient one, fully meets

the requirements of the case, and is simple and cheap in manufacture.

Although the features of improvement are small they are important to the satisfactory working of the sparker mechanism and add but little to the cost of manufacture.

Having now particularly described our invention, we hereby declare that what we claim as new and desire to be protected in by Letters Patent, is:

1. In a sparker mechanism of the class described, the combination with a vertical shaft driven from the crank shaft of an engine and a horizontal shaft which operates the sparker mechanism of the individual cylinders which horizontal shaft is driven from the vertical one by spiral gears, of means for driving the gear on the vertical shaft said means comprising a pin secured to the shaft and offering a square face to the direction of rotation, a corresponding notch in the contiguous face of the driving gear which gear is free to turn and lift on the shaft the said notch having a square driving face to engage that of the pin on the shaft and a backward bevel so that when the vertical shaft is rotated in an opposite direction to that of the normal drive the spiral gear will be lifted out of engagement with the driving pin, and means for normally holding the gear down on the pin.

2. In a sparker mechanism of the class described, the combination with a vertical shaft

driven from the crank shaft of the engine and a horizontal shaft from which the sparker mechanisms of the individual cylinders are operated of means for driving the horizontal from the vertical shaft, said means comprising spiral gears the one on the vertical shaft is free to turn and lift on that shaft and rests on a collar thereon, a pin projecting upward from the collar the upper end of which pin is beveled downward toward the collar, a beveled notch in the loose gear having a square driving face and bevel corresponding to that of the pin, and a spring between the upper end of the shaft and the loose bevel gear.

3. In a sparker mechanism of the class described, a sparker plug, a movable electrode having a stem passing therethrough, a trip lever having a pivotal portion mounted on the sparker plug to operate said movable electrode, an upward projection from the sparker plug, said projection having bearings to support the upper ends of the pivotal portion of the trip lever and the movable electrode stem.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

HENRY SCHAAKE.
JOHN T. COWIE.

Witnesses:

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