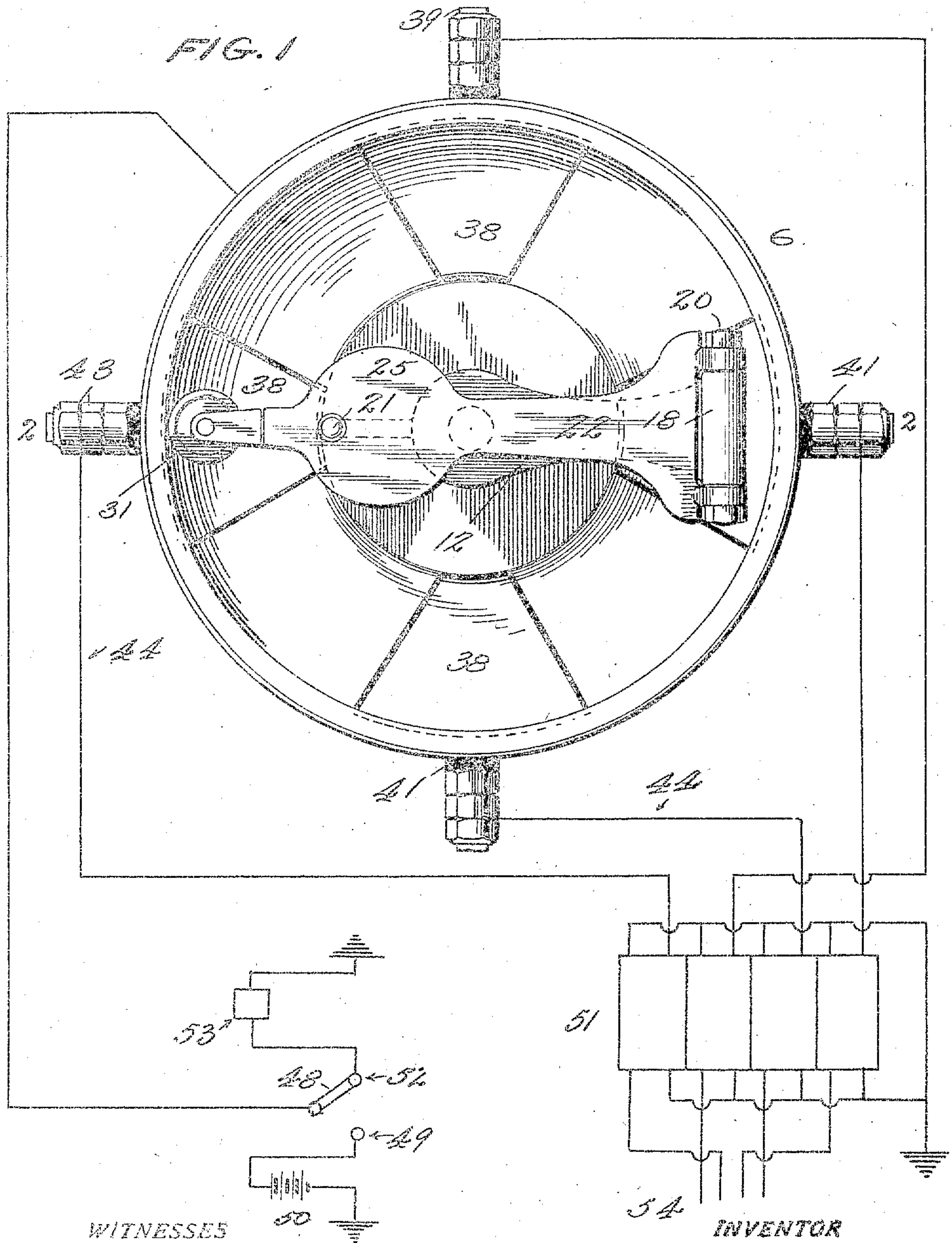


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 TIMER FOR COMBUSTION ENGINES.  
 APPLICATION FILED NOV. 29, 1909.

956,324.

Patented Apr. 26, 1910.

2 SHEETS—SHEET 1.



C. K. Davies  
 B. P. Fishburne

INVENTOR  
 Paul B. Fant.

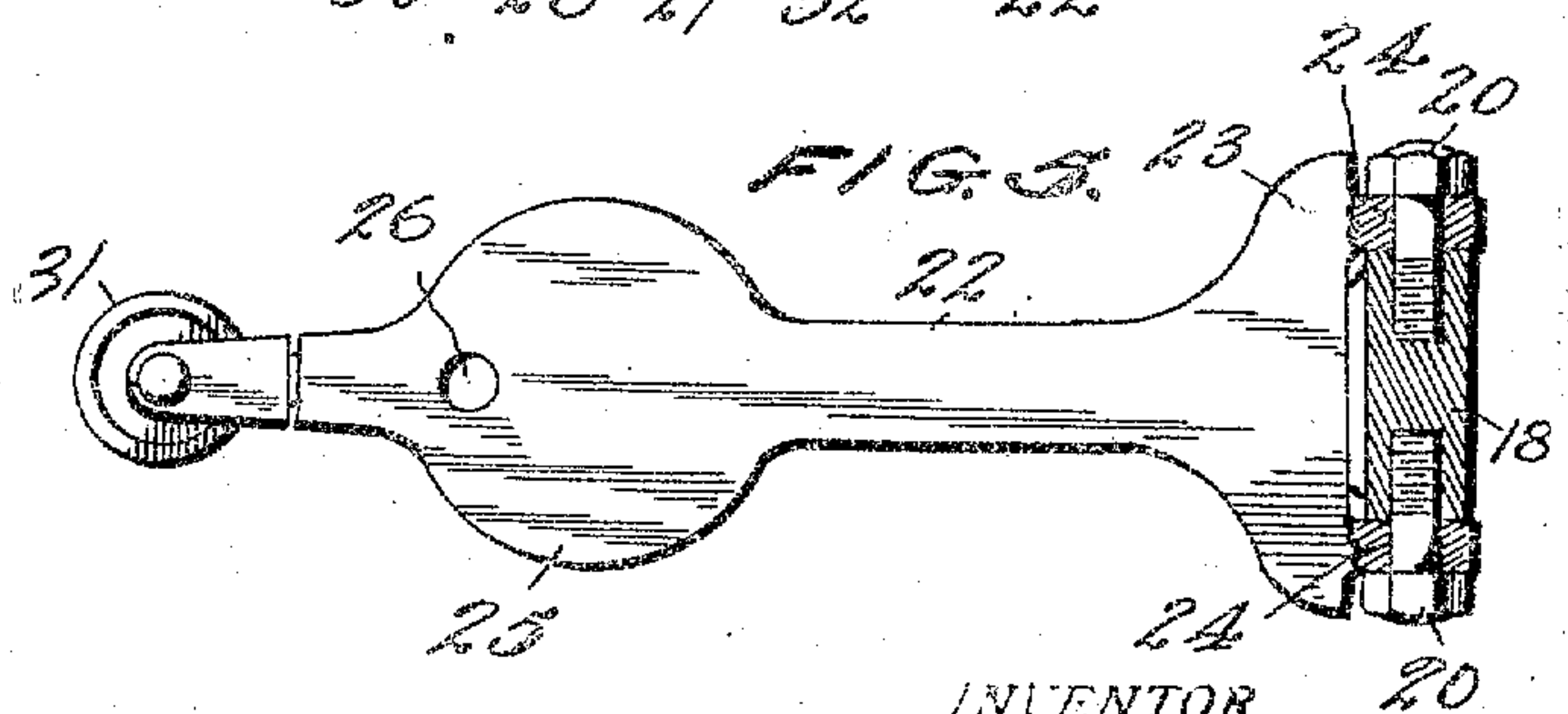
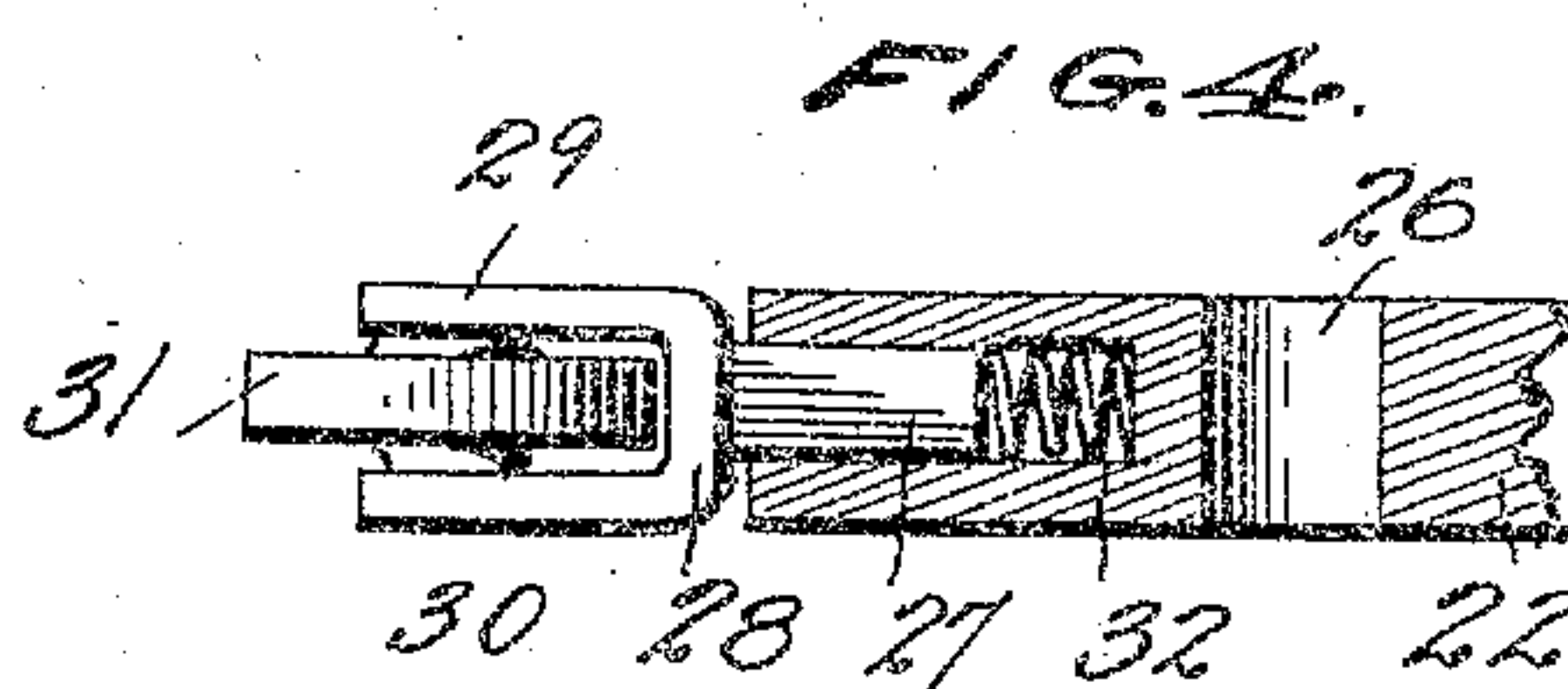
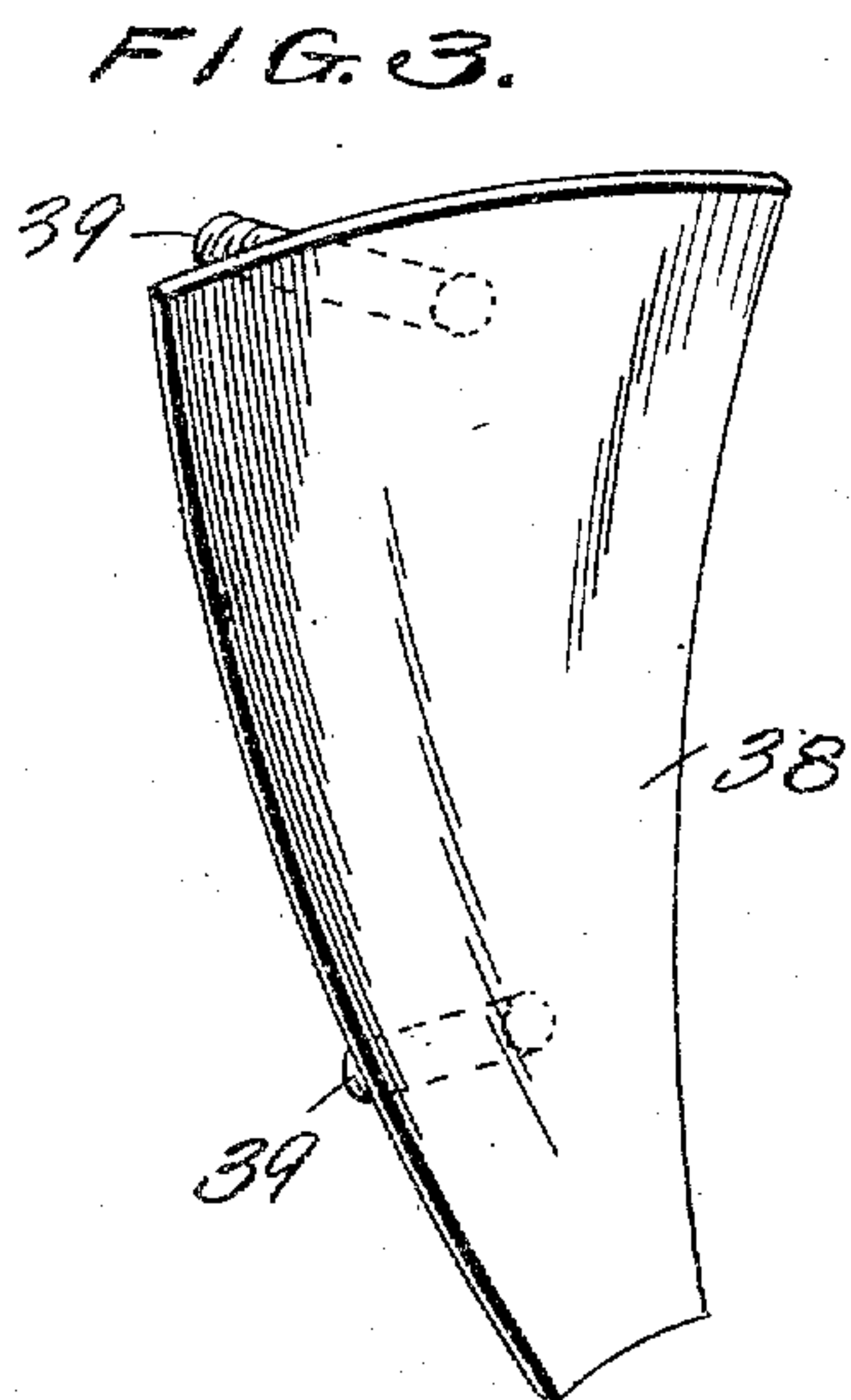
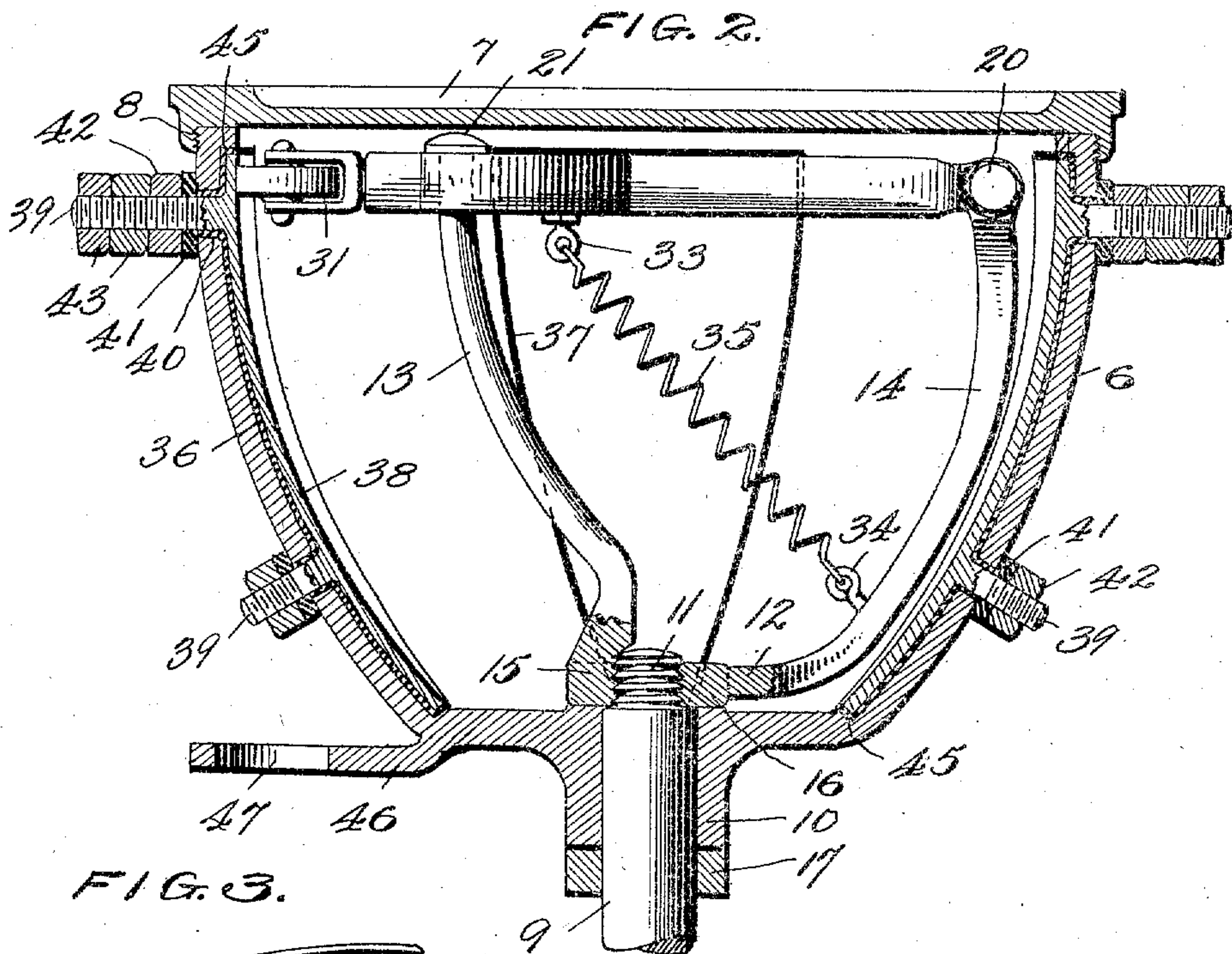
Attorney  
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2 SHEETS—SHEET 2.



WITNESSES  
 C. H. Davies  
 B. P. Fishburne

INVENTOR  
 Paul B. Fant  
 Attorney  
 C. H. Parker



# UNITED STATES PATENT OFFICE.

PAUL B. FANT, OF NEWARK, OHIO.

TIMER FOR COMBUSTION-ENGINES.

956,324.

Specification of Letters Patent.

Patented Apr. 26, 1910.

Application filed November 29, 1909. Serial No. 530,389.

*To all whom it may concern:*

Be it known that I, PAUL B. FANT, a citizen of the United States, residing at Newark, in the county of Licking and State of Ohio, have invented certain new and useful Improvements in Timers for Combustion-Engines, of which the following is a specification.

This invention relates to improvements in sparking devices for ignition systems in conjunction with variable speed combustion engines, and particularly for increasing the spark efficiency at all speeds of an engine coupled thereto.

It is the purpose of my invention to increase the spark efficiency at any rate of speed and decrease the chance of the spark "jumping" when the engine is operating at high speed.

A further object of this invention is the provision of a simplified form of centrifugal device for operating automatically with increase in speed, to effect an increased length of contact between the contact elements of the timer.

In the accompanying drawings wherein like numerals refer to like parts, Figure 1 is a plan view of my invention with the cover removed and in conjunction with a common form of ignition circuit. Fig. 2 is a sectional view on line 2—2 of Fig. 1, and showing the device in the position maintained when running at full speed. Fig. 3 is a perspective view of one of the metallic segments. Fig. 4 is a detailed view partly in section of the preferred form of electrical contacting device, and, Fig. 5 is a detail plan view of centrifugally operated member of the timer with especial reference to its mounting.

In the drawings, 6 denotes a casing, which, in the preferred form of my invention is open at one side, crucible-like in shape and open at one side as shown. Secured to the casing, preferably by threaded means 8, is a plate 7 for protecting the contained mechanism of the timer against dust, water, etc. On the lower, closed face of said casing and centrally disposed therein, is journaled a shaft 9, passing through a shoulder 10 on the bottom of the casing 6, which acts as a bearing for said shaft. The inner end of the shaft 9 is threaded as shown at 11, for securing thereto a forked member 12. Said forked member at the union of its arms 13 and 14, is enlarged, as shown at 15, and

machined with a shoulder 16, which shoulder, with a collar 17 secured to the outer portion of the shaft 9 and adjacent the bearing 10, prevents said shaft from vibrating, laterally.

Projecting from one side of the enlarged portion 15 of the forked member 12, is the arm 14. Said arm extends nearly to the side of the casing 6 at which point it turns upwardly, assumes substantially the curve of the said casing, and terminates a short distance from the plate 7 and in a T-head 18, circular in cross-section, with parallel opposite end faces. In the centers of said faces are tapped holes, in alinement with each other, for the reception of pivotal bolts 20. The other branch of the forked member 12 is the arm 13, circular in cross-section and formed on an arc with its center of curvature at the central point of the T-head 18 of the arm 14. Said branch 13 rises irregularly from a point slightly to one side of the threaded end of the shaft 9 for a short distance before entering upon a regular arc and at its uppermost extremity, terminates in a flattened head 21.

Pivoted on the bolts 20, is a swinging element 22, formed on one end of which is a yoke terminal 23, the jaws of which straddle the T-head 18 of the arm 14, and have centrally disposed therein, holes 24 to slidably surround said bolts 20 hung thereupon. The outer end portion of said swinging element is enlarged, as shown at 25 to form a weight, the purpose of which will be later set forth. At a distance along the element 22, from the pivotal point of the yoke 23, equal to the distance from said pivotal point to the center of the arc-arm 13 is a hole 26, slightly greater in diameter than the arm 13, and for sliding engagement therewith. Slidably fitted in the outer end of the element 22 is a rod 27, in the present instance square in cross-section. Carried on one end of the rod is a yoke portion 28, carrying between the jaws 29 and 30 a revoluble wheel 31. This wheel is designed to maintain the electrical contact between the stationary and the revolving parts of said timer and to keep it pressed normally outward is a compression spring 32, set into the end of the element 22 and behind the rod 27. On the under side of said element 22, toward its outer portion is secured an eye 33 and similarly secured to the lower portion of the arm 14, and extending toward the eye 33,

is another eye 34. Between said eyes is stretched an expansion spring 35 which normally holds the swinging element 22 at its lowest position, or toward the shaft 9.

5 Around the inner periphery of the casing 6 are laid metallic segments 38. The metallic segments, besides being insulated from each other are insulated from the casing 6 by suitable material 36. For securing  
10 the metallic segments to the side walls of the casing, and for affording a means for connecting them in the electrical circuits of the ignition system, are provided bolt shanks 39, integral with said metallic segments and  
15 extending through holes 40 in the casing 6 and insulated therefrom by a continuation of the material 36. On the outer ends of said bolts are insulating washers 41, clamping nuts 42, and on one set additional nuts  
20 43 for firmly holding connection wires 44 of the electrical circuit. To avoid raising of surfaces above the inner surface of the casing 6, the segment elements 38 are sunken in a peripheral groove 45.

25 From one side of the lower portion of the casing 6 and integral therewith, is an extension 46 in which is a hole 47, the combination acting as a means for turning the timer about the axis 9 for regulating the speed of  
30 the engine controlled.

The method of connecting the timer device in an ordinary ignition circuit is shown in Fig. 1: When starting the engine (not shown), the switch 48 is thrown to the point  
35 49 and current from the cells 50 passes through said switch into the timer, successively through the contact portions therein, through the primary windings of the induction coils 51, and back to the cells. After  
40 the engine is well started, the switch 48 is thrown to the point 52 and a direct current magneto 53 generates the ignition current in place of the battery 50 and the current passes through the same course as before de-  
45 scribed. The wires 54 lead to the spark plugs in the individual cylinders (not shown) of the engine controlled.

Having described my invention, I claim:

1. A timing device of the character described, comprising a stationary crucible- 50 shaped support, contacts increasing in width toward the upper ends thereof arranged within said support, an approximately U-shaped support rotatably mounted within said first named support, a contact element 55 pivotally mounted upon one arm of said approximately U-shaped support, the other arm of said U-shaped support serving as a guide for said contact element, and said contact element being adapted to be actu- 60 ated by centrifugal force.

2. A timing device of the character described, comprising a crucible-shaped support, contacts increasing in width toward the upper ends thereof arranged within said 65 support, an approximately U-shaped support rotatably mounted within said first named support, a contact element pivotally mounted upon one arm of said approximately U-shaped support, and said contact element 70 being slidably mounted upon the other arm of said U-shaped support.

3. A timing device of the character described, comprising a crucible-shaped support, contacts increasing in width toward 75 the upper ends thereof arranged within said support, an approximately U-shaped support substantially vertically disposed and rotatably mounted within said first named support, a contact element pivotally mounted 80 upon one arm of said approximately U-shaped support, said contact element being slidably mounted upon the other arm of said approximately U-shaped support, said contact element being capable of oscillating 85 in a substantially vertical plane, and means for retarding the movement of said contact element.

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

PAUL B. FANT.

Witnesses:

HARRY SCOTT,

C. C. McGRUDEY.