

June 5, 1934.

J. BERNARD

1,961,275

HIGH TENSION IGNITION MAGNETO

Filed April 29, 1931

2 Sheets-Sheet 1

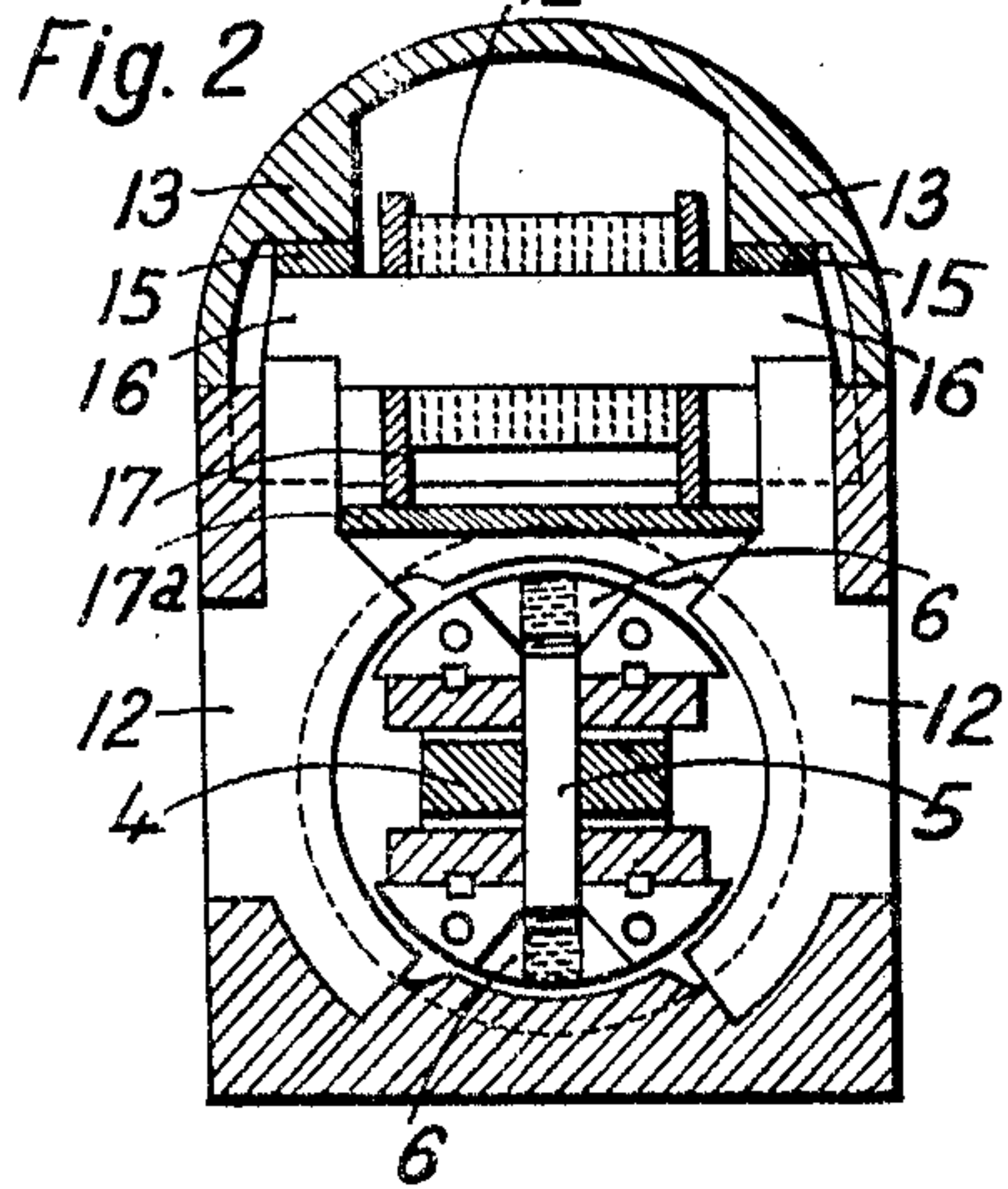
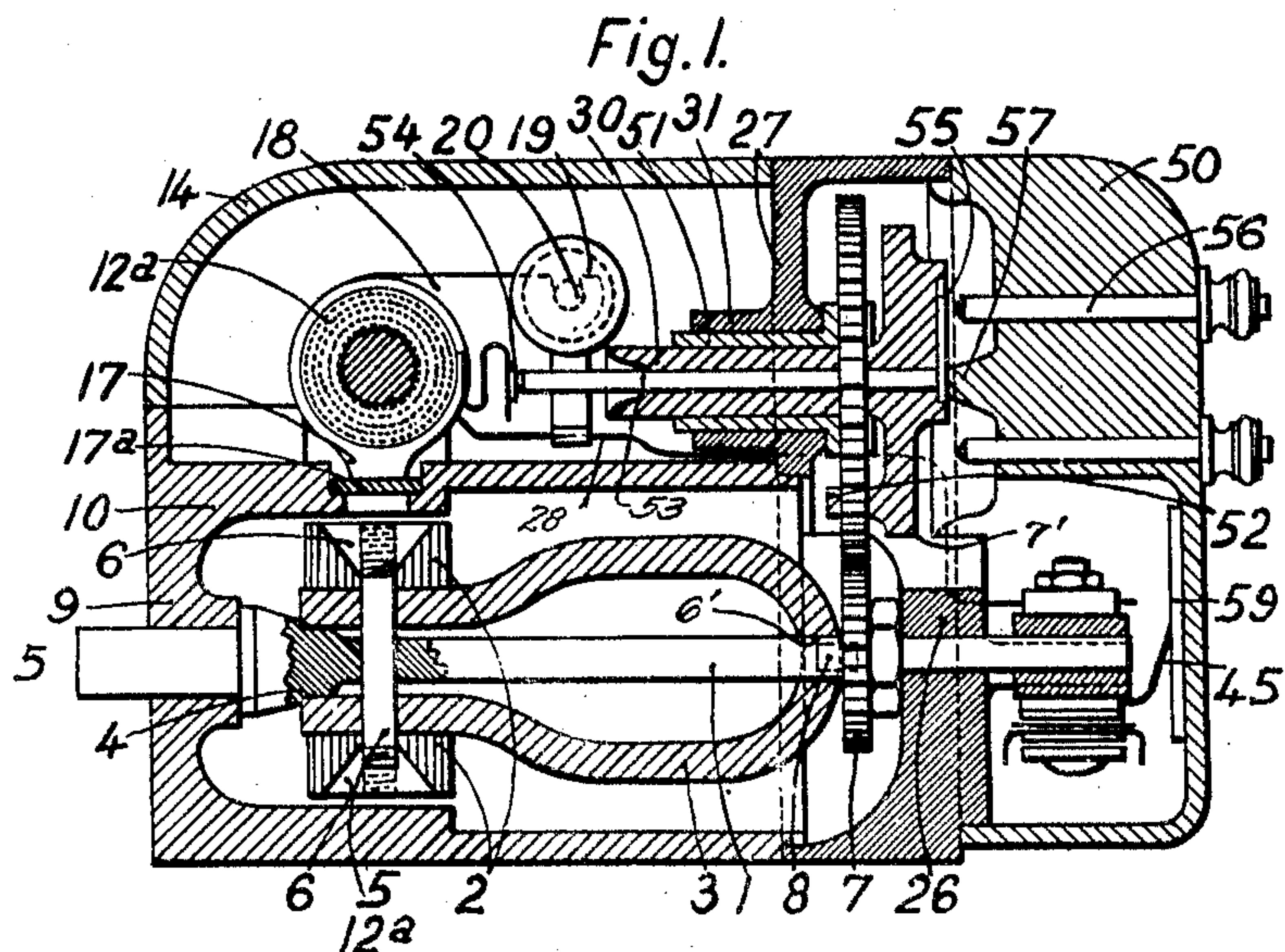


Fig. 4.

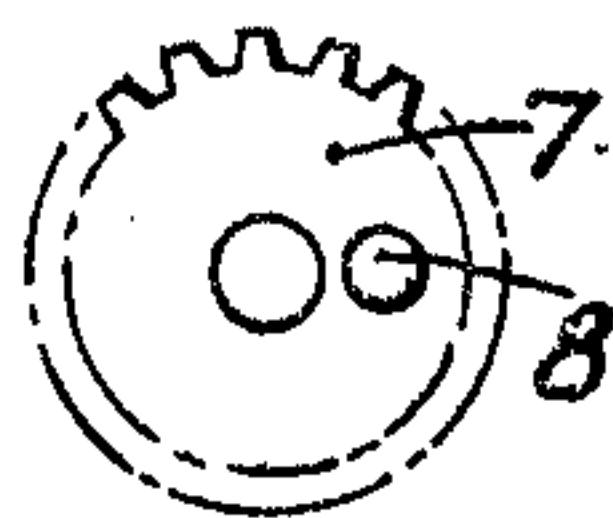
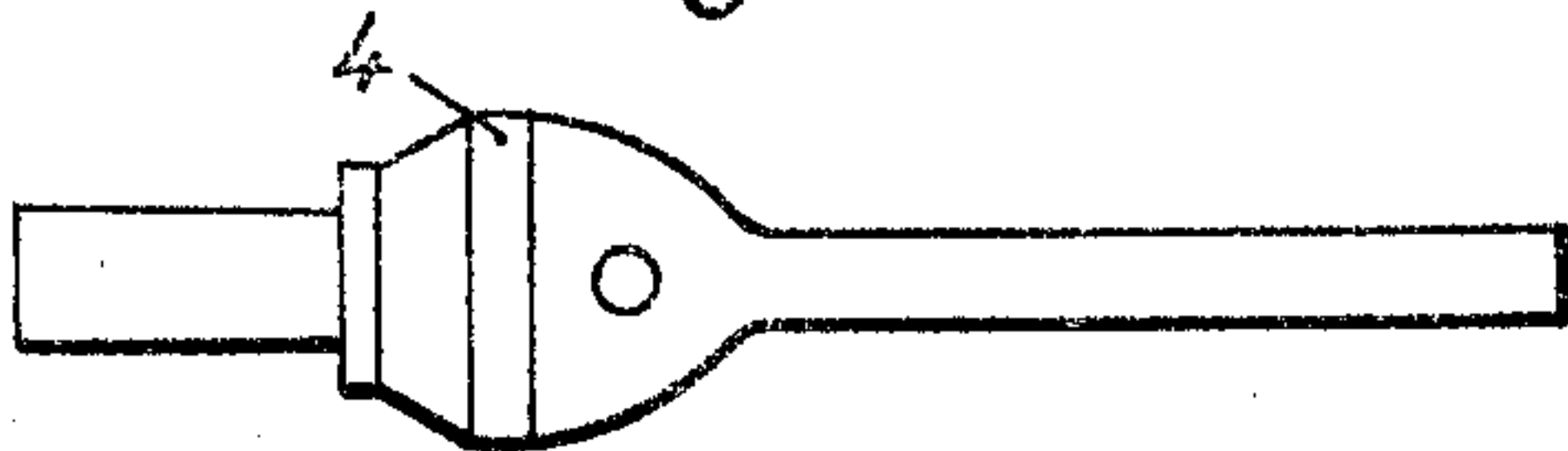


Fig. 3.



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Fig. 2.

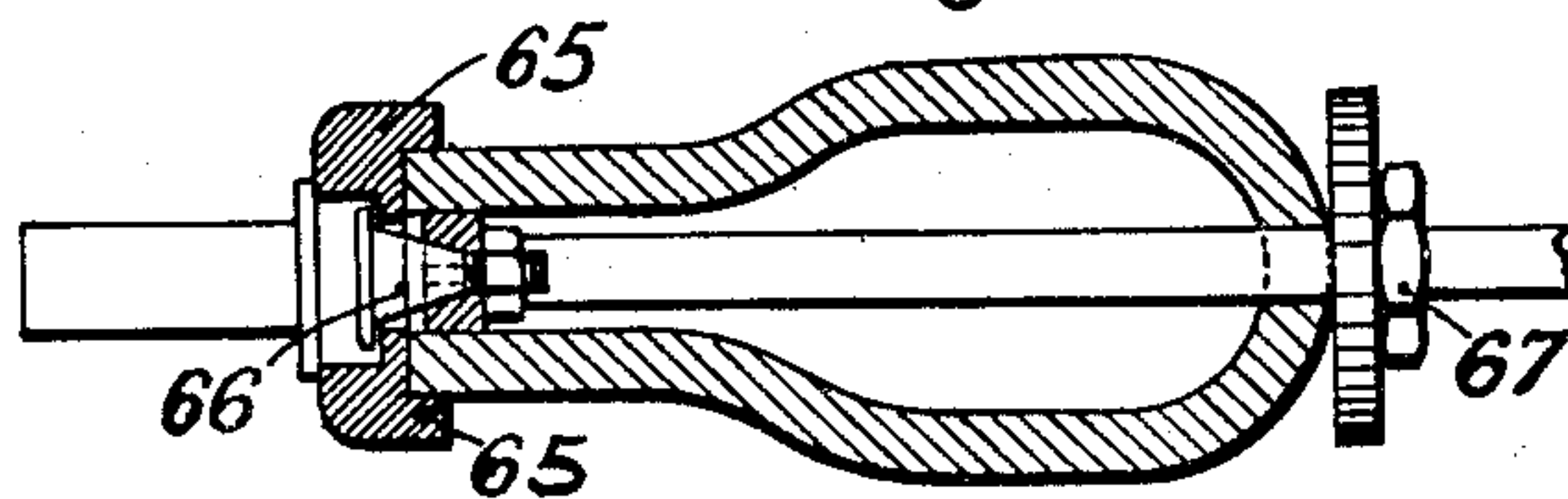


Fig. 8.

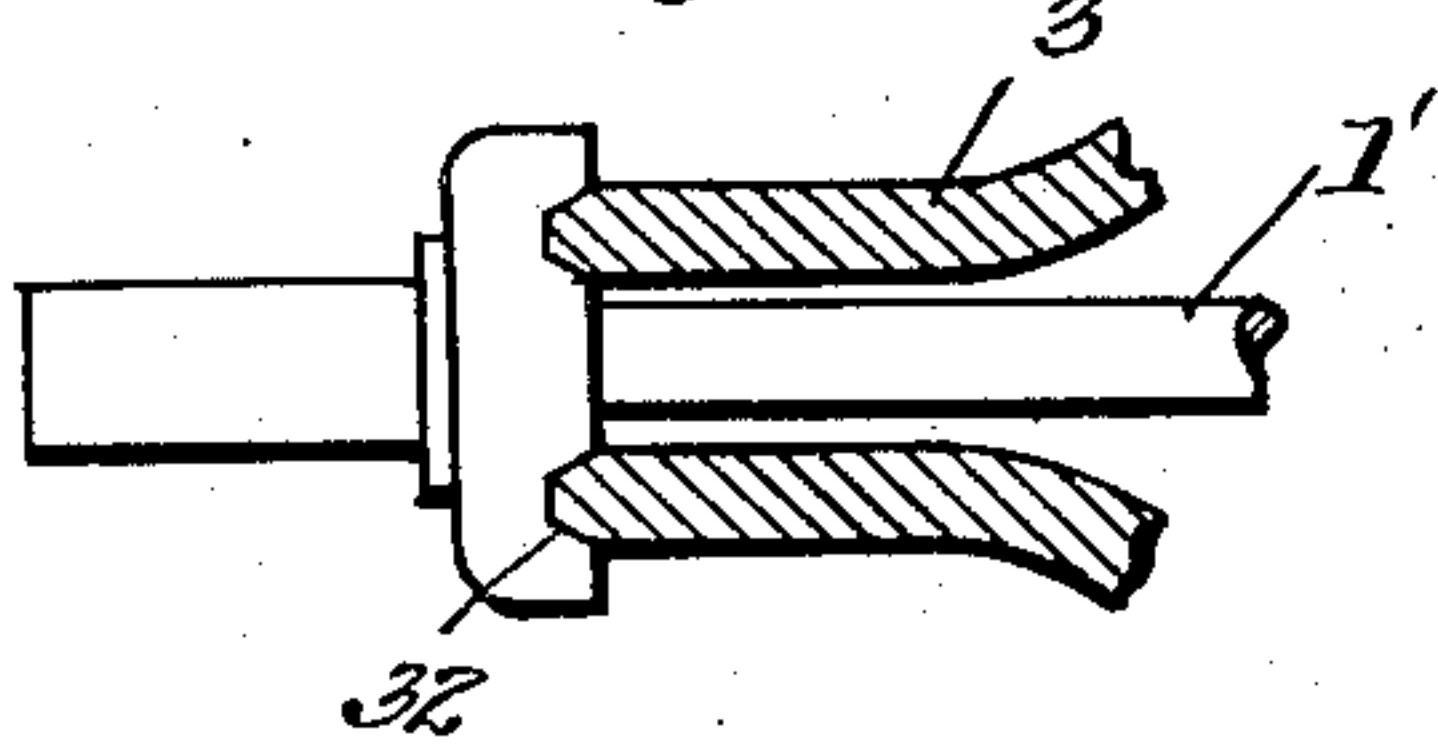


Fig. 9.

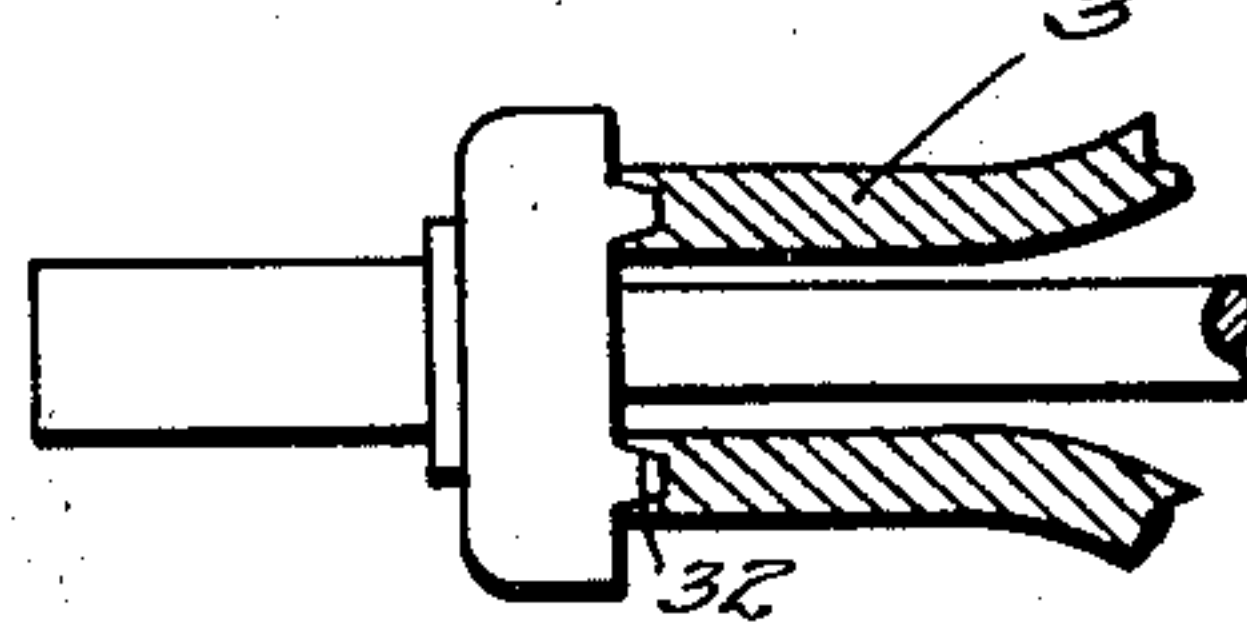


Fig. 10.

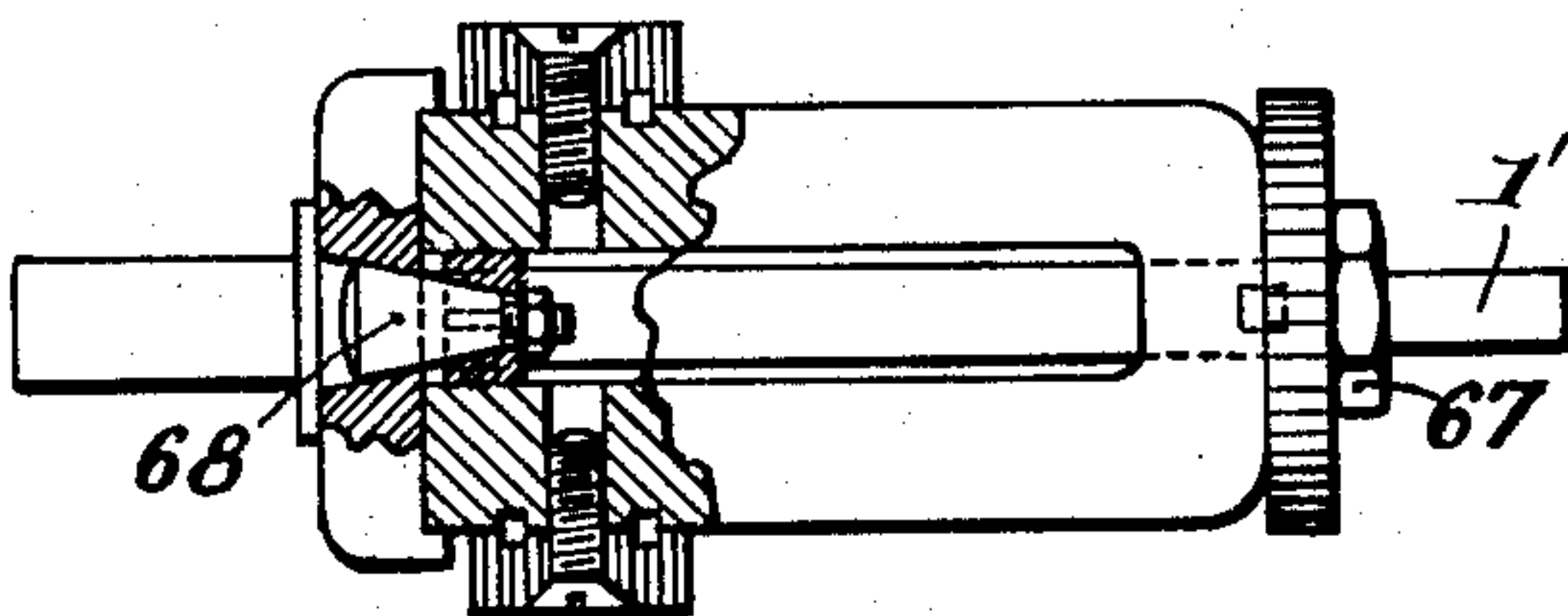


Fig. 11.

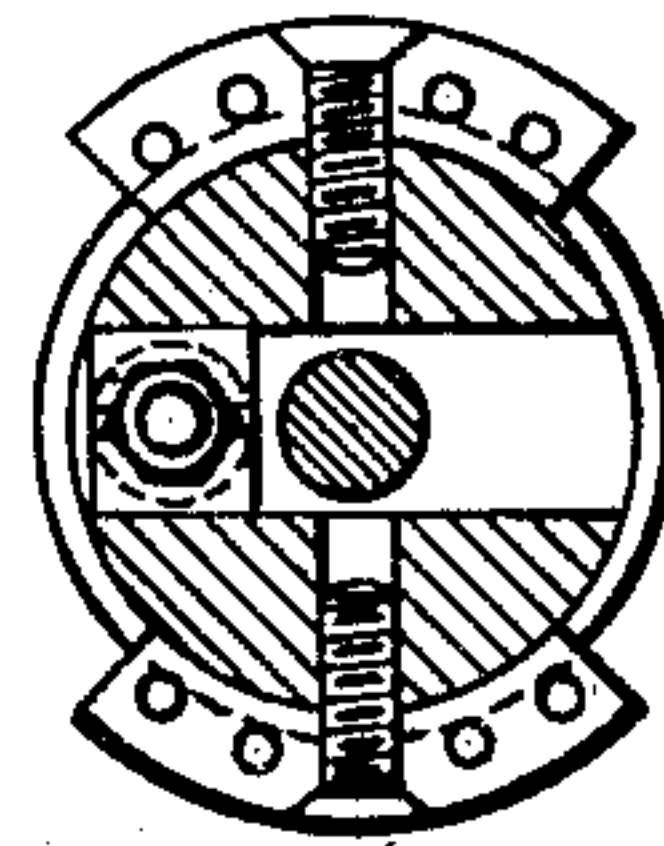


Fig. 5.

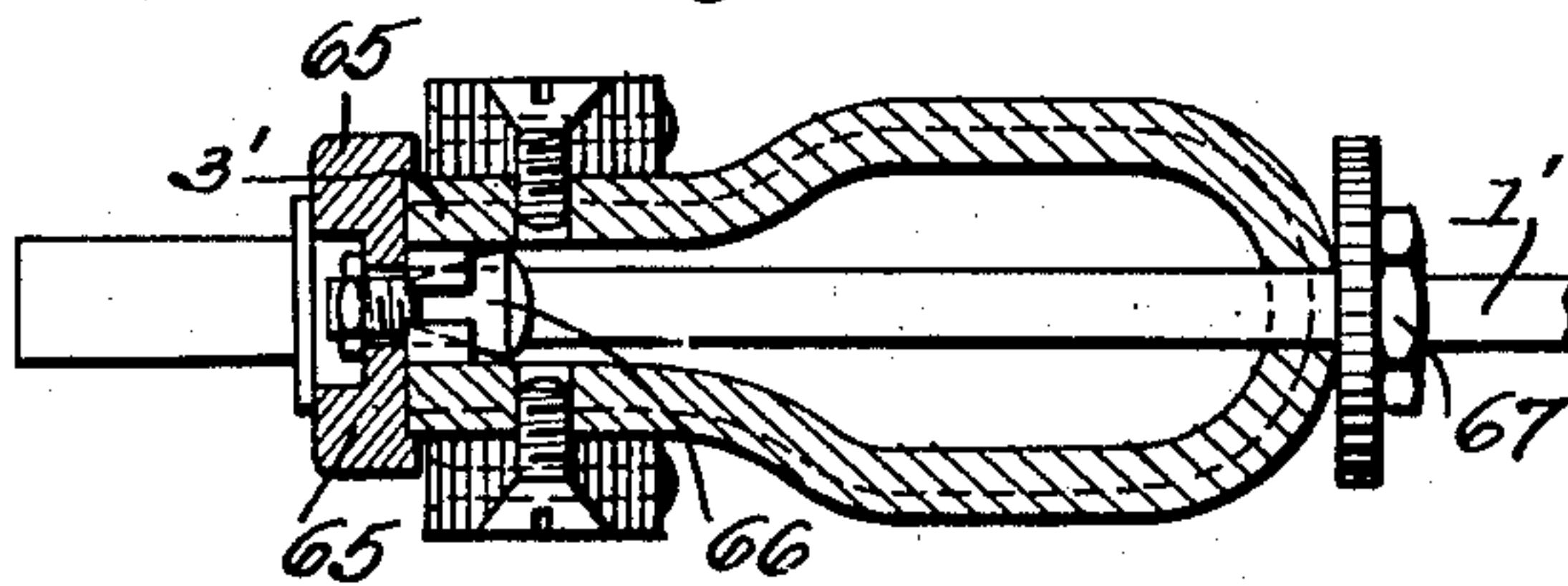
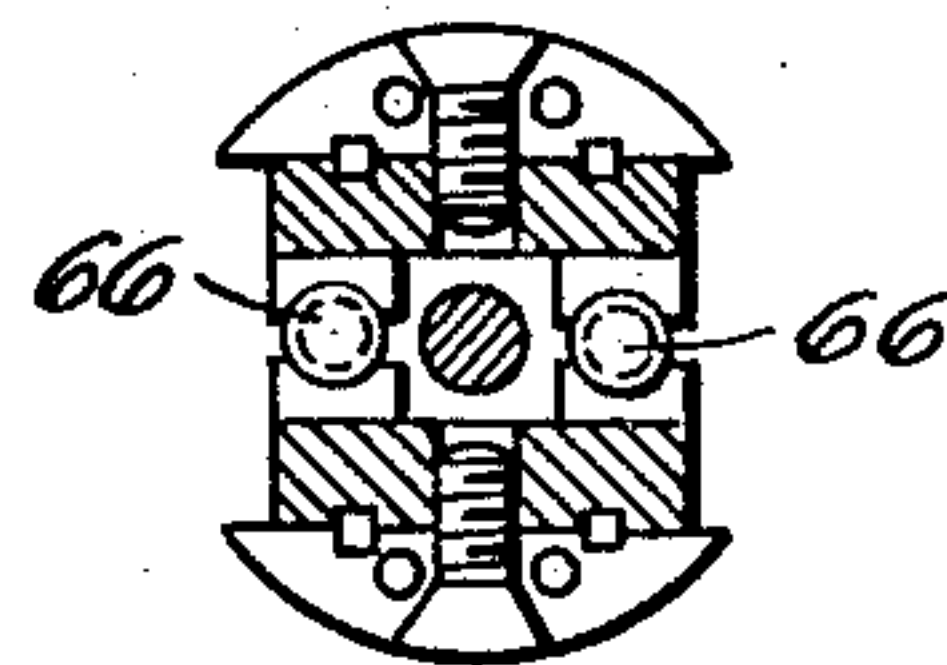


Fig. 6.



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## UNITED STATES PATENT OFFICE

1,961,275

## HIGH TENSION IGNITION MAGNETO

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Brethmas, FranceApplication April 29, 1931, Serial No. 533,856  
In France May 19, 1930

9 Claims. (Cl. 171—209)

This invention is directed to improvements in high tension ignition magnetos.

According to the invention, the magneto comprises a horse-shoe or U-shaped magnet mounted on a driving shaft extending in a direction parallel to the legs of the magnet, and pole shoes located exteriorly of the said legs, characterized in that the driving connection between the magnet and the shaft is effected at the extremities of the legs of the magnet, the elasticity or resiliency of which is employed to wedge or bind the legs against a member associated with the shaft, whereby the shaft will not be subjected to torsional stresses.

With these and other objects in view, this invention resides in the novel features of construction, formation, combination and arrangement of parts to be hereinafter more fully described, claimed and illustrated in the accompanying drawings.

In order that the said invention may be clearly understood and readily carried into effect the same will now be described more fully, by way of example, with reference to the accompanying drawings in which:—

Figure 1 is a longitudinal sectional view of a magneto embodying the invention;

Figure 2 is a cross section thereof;

Figure 3 is a detail of the coupling member;

Figure 4 is a view of the driving pinion for the distributor means;

Figures 5 and 6 are, respectively, a longitudinal and cross section of a modified form of driving connection between the shaft and magnet;

Figure 7 is a longitudinal section of another modification;

Figures 8 and 9 are further modifications, and Figures 10 and 11 show, respectively, a longitudinal and a cross section of a still further modified arrangement.

By the present invention it is possible to employ a magnet having pole pieces of the greatest possible length within the overall length of the magneto, thus allowing a magnet steel of comparatively low magnetic properties to be used.

The fact of driving the magnet by means of the extremities of its legs is an advantage also due to the arrangement adopted for the pole pieces, making it easy to design a unit of great mechanical strength, while at the same time eliminating all precision adjustments as well as any delicate members in the assembly, and also avoids any torsional stresses on the spindle or stem of the shaft when driving the unit, a fact which is of particular advantage in the case of this ap-

plication, as in this case there is a great mass and a large diameter to be reckoned with.

The driving pinion of the distributor which is mounted at the top of the magnet is driven by the latter by means of a spur so as to avoid the driving stress being exerted on the shaft or spindle, and is held in position by means of a nut which ensures the longitudinal tightening up of the magnet.

Referring to the drawings, a magnet 3 of horse-shoe or U-shape is mounted on a through going spindle or shaft 1, the said magnet having pole shoes 2 mounted on the exterior faces of the parallel branches thereof. The interior faces of the branches of the magnet press at their extremity, by reason of their elasticity or resiliency, against a member 4, as clearly shown in Figures 1 and 2, which is enlarged so as to provide a driving shoulder. A threaded bolt or stem 5 formed of a diamagnetic material and provided at both extremities with a countersunk nut 6, holds the whole together. The bight portion of the magnet is provided with a recess 6' adapted to receive a locking pin 8, Figures 1 and 4, carried by the pinion 7 operable to drive the distributor 7' whereby the pinion is driven by the magnet. The stress of starting and running to which the free extremity of the shaft 1 is subjected is thus transmitted to the magnet without stressing the stem of the shaft. The end bracket 9 for the magnet, which bracket may be provided with a device for taking up any play, is integral with the frame or machine housing 10, thereby rendering the whole unit capable of withstanding mechanical and starting or torsional stresses.

Figures 5 and 6 illustrate a second constructional form of the coupling of the magnet to the spindle or shaft.

The extremities of the legs of the magnet 3<sup>1</sup> are forced or squeezed externally against the shoulders or rectilinear projections 65 which are fixed to the shaft by means of two keys or pins 66 loosely mounted transversely on the shaft 1<sup>1</sup> and placed between the magnet legs to keep them apart. In Figure 5 the nut for tightening up the key or pin 66 is placed outside the magnet 3<sup>1</sup>, whereas according to Figure 7 the nut is situated on the inside of the magnet.

In both cases the magnet 3<sup>1</sup> is kept in its longitudinal position and securely fixed therein by means of a nut 67.

Figures 8 and 9 show another embodiment, wherein the legs of the magnet 3<sup>1</sup> are shaped as projecting legs either solid or recessed and fit into corresponding rectilinear grooves 32 provided in



the collar of the shaft 1' and are tightly forced and fitted in this position, making use, if required, for this purpose of the resiliency of said legs by means of a permanent pressure, preferably exerted by means of a nut at the apex of said magnet.

The arrangements according to Figures 1, 5 and 6, 7, 8 and 9 can also be adapted to magnets of curved formation, provided the legs are terminated by flat surfaces for the purpose of assembling.

Figures 10 and 11 show an embodiment adapted to a curved formation of magnet, the latter being fitted into a cylindrical member on the shaft 1' wherein it is free to rotate. The engagement of the two is effected by means of the key or pin 68, the head of which is wedged into the shaft or spindle 1' and which is fixed rigidly between the magnet legs, thus forcing them apart, the nut 67 ensuring the tightening up in a longitudinal direction.

What is claimed is:

1. A magneto comprising a U-shaped magnet having resiliently connected legs, a driving shaft therefor extending in a direction parallel to the legs of the magnet, an enlarged member associated with the shaft and lying between the legs and against which the ends of the resilient legs bear, pole shoes located exteriorly of the said legs, whereby the driving connection between the magnet and the shaft is effected at the extremities of the legs, the resiliency of which serves to yieldably bind the legs against said enlarged member so that the shaft is not subjected to torsional stresses independently of the legs.

2. A magneto according to claim 1, wherein the said enlarged member associated with the shaft is shaped to afford driving means to be engaged by the extremities of the legs of the magnet, and wherein the pole shoes and the magnet are fixed in position by means of nuts in screw-threaded engagement with a rod of non-magnetic material.

3. A magneto according to claim 1, wherein the extremities of the legs of the magnet are held in engagement with projections carried by a member fixed with the shaft by a key positioned between the legs of the magnet.

4. A magneto according to claim 1, wherein the extremities of the legs of the magnet are provided with projections or recesses to cooperate with recesses or projections, respectively, on a member fixed relatively with the shaft.

5. A magneto according to claim 1, wherein the legs of the magnet are of curved formation and engage within a recess in a member fixed relative to the shaft, and a key being wedged into the shaft and adapted to spread the legs of the magnet.

6. A magneto according to claim 1, wherein each pole shoe is fixed to its respective leg of the magnet by means of a screw.

7. A magneto according to claim 1, in which the shaft has a driving pinion for the distributor means a bight portion at which, the said pinion is arranged between the legs and the shaft, the pinion being held in position by a nut on the shaft and employed for tightening the magnet on the shaft.

8. A magneto comprising a U-shaped magnet, a driving shaft therefor extending in a direction parallel to the legs of the magnet, pole shoes carried by the legs, means for clamping the legs of the magnet to a part of the shaft said clamping means being operative longitudinally of the shaft, a bight portion of the shaft having a recess therein, a distributor driving pinion disposed at the bight portion of the magnet and having a pin thereon engaging said recess.

9. A magneto comprising a U-shaped magnet, a distributor driving shaft associated with the magnet extending between the legs thereof, pole shoes mounted at the ends of the legs of the magnet, and a bolt passable through the legs and pole shoes, as and for the purpose set forth.

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