O. M. LEICH.

GENERATOR APPARATUS.

APPLICATION FILED JUNE 19, 1908.

964,033. Patented July 12, 1910.

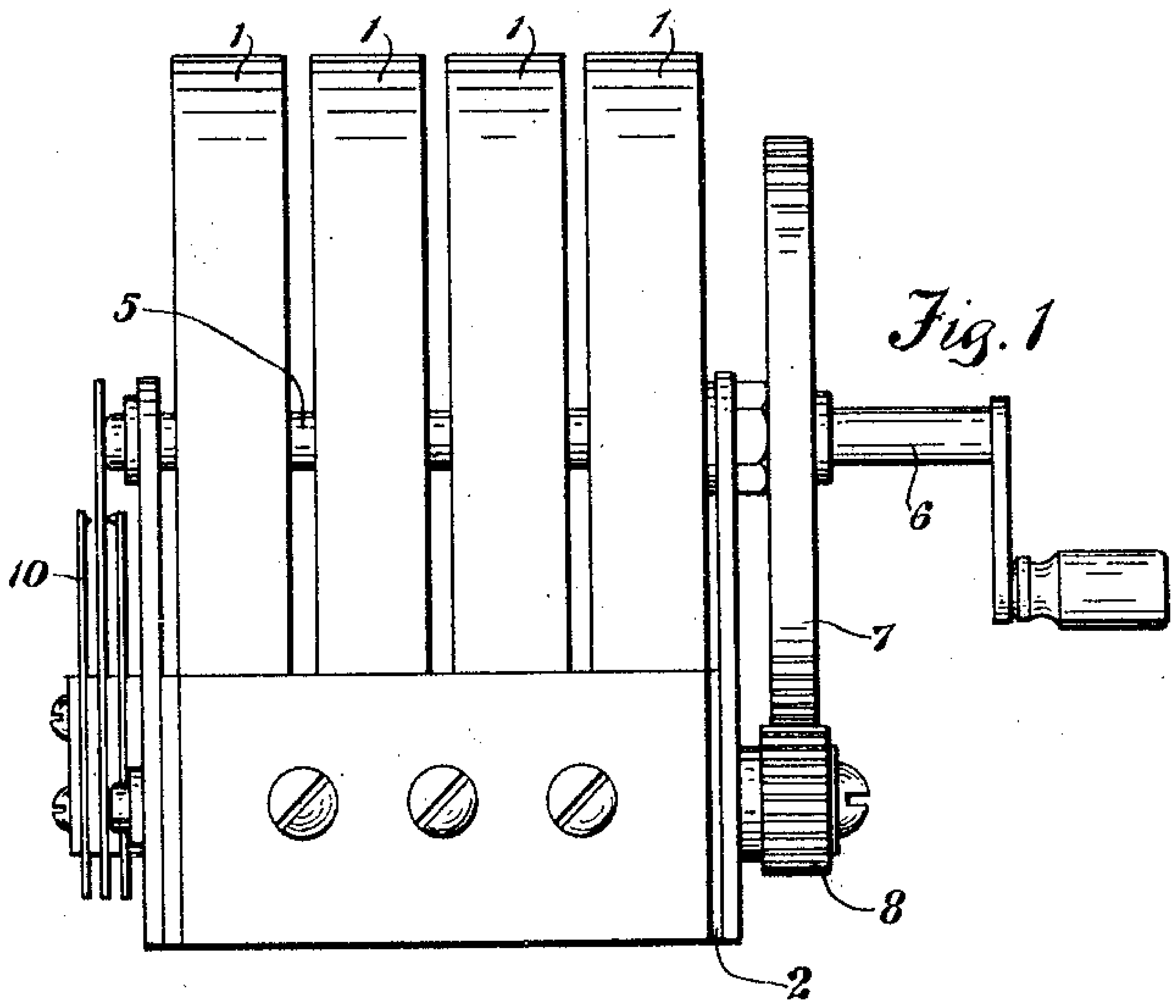

Fig. 1

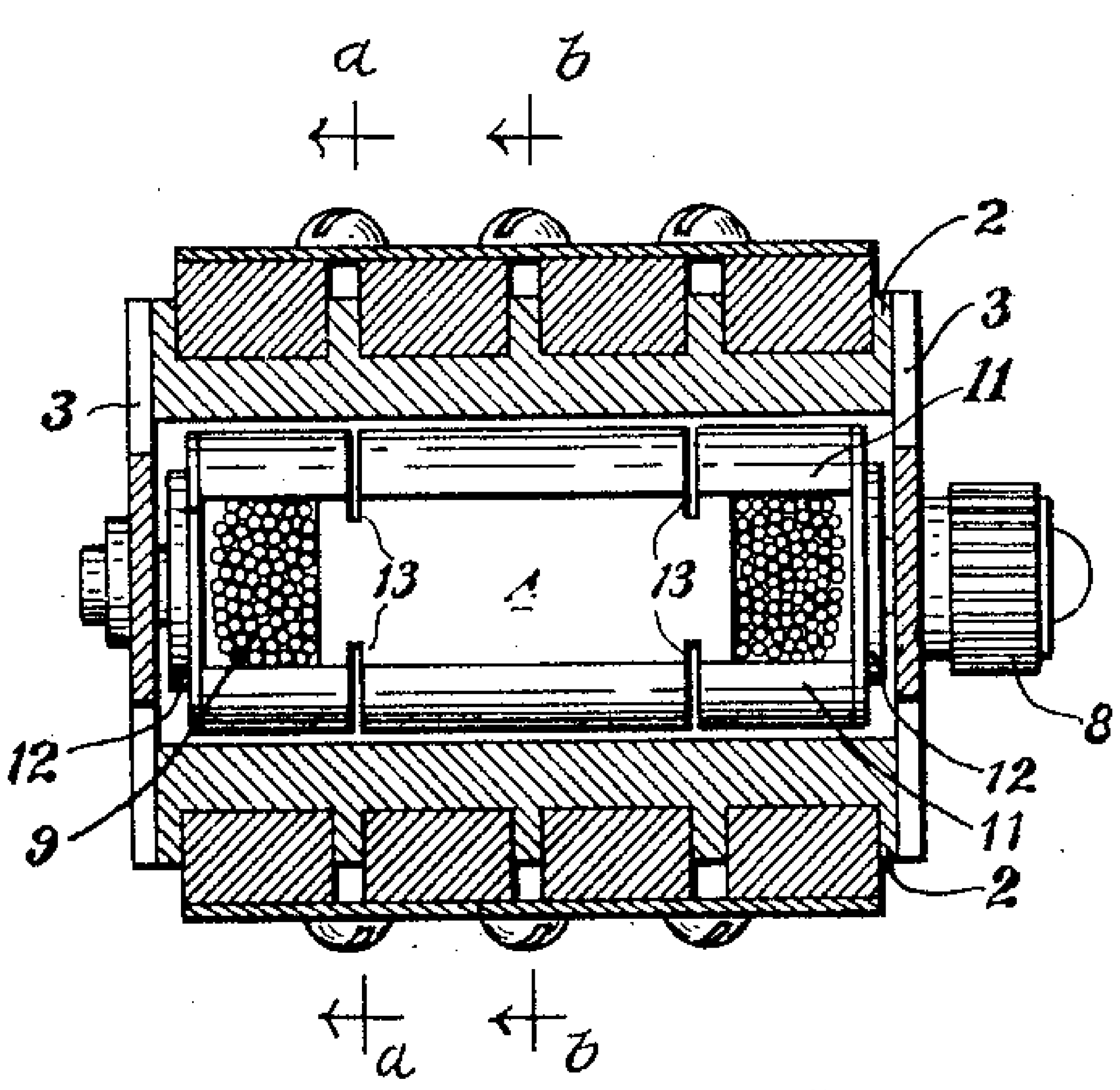

Fig. 2

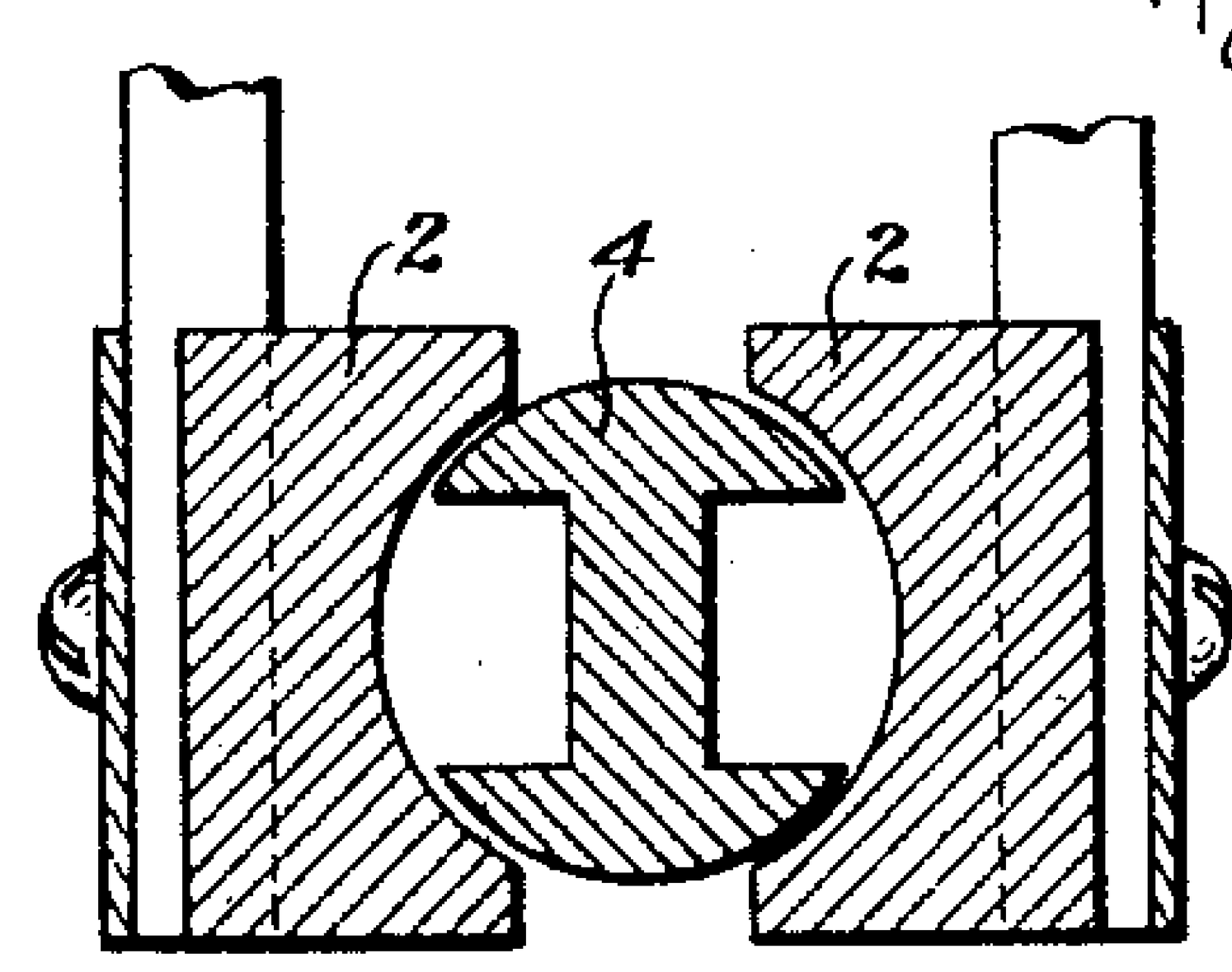

Fig. 3

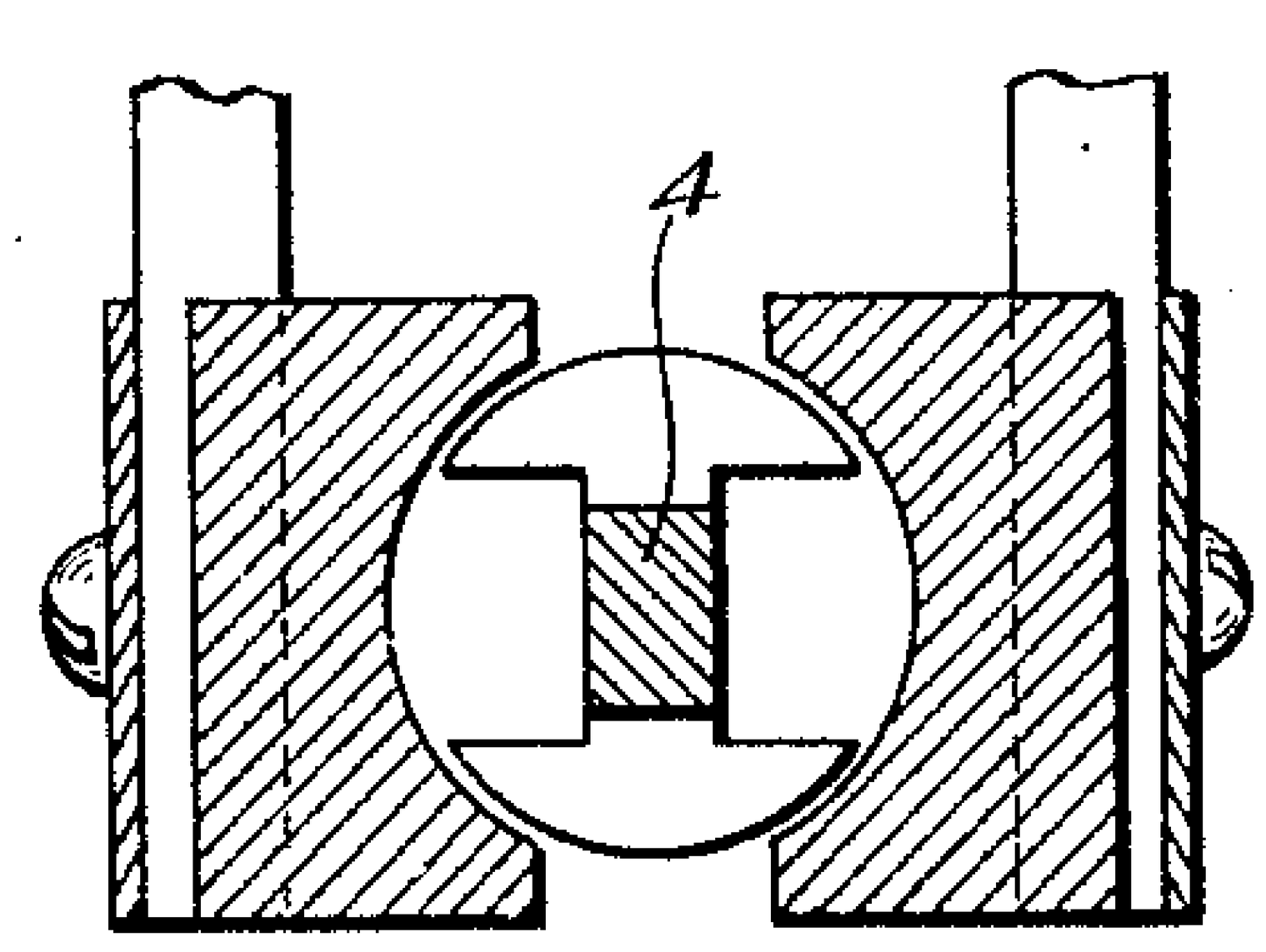

Fig. 4

WITNESSES

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GENERATOR APPARATUS.

964,033. Specification of Letters Patent. **Patented July 12, 1910.**

Application filed June 19, 1908. Serial No. 439,309.

To all whom it may concern:

Be it known that I, OSCAR M. LEICH, a citizen of the United States, residing at Genoa, in the county of Dekalb and State of Illinois, have invented a certain new and useful Improvement in Generator Apparatus, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of the specification.

My invention relates to generator apparatus, and has for its object the provision of an improved generator, applicable more particularly for use in telephone appliances and for gas engine work.

I will describe my invention more in detail by reference to the accompanying drawing illustrating one embodiment thereof, in which—

Figure 1 shows a conventional type of generator to which my invention is applicable. Fig. 2 shows a partial horizontal sectional view of said generator along the line of the axis of the armature. Fig. 3 is a sectional view on lines *b*—*b* of Fig. 2, and Fig. 4 is a sectional view on lines *a*—*a* of Fig. 2.

Like characters of reference indicate like parts throughout the different figures.

The generator shown in the figures comprises permanent magnets 1—1, suitably mounted upon the pole pieces 2—2. The pole pieces have end plates 3—3, which provide suitable bearings for the armature 4, and at the same time provide suitable bearings for the counter shaft 5, which is operated by means of a handle 6, through the interposition of gears 7 and 8. The armature 4, is wound with many turns of fine wire 9, one of which is brought to the terminal 10, and the other terminal of which is preferably conductively associated with the frame or pole pieces 2. A circuit is thus established from the spring 10 to the frame of the machine.

In manufacturing generators of this type, which at the present time find their greatest use in telephone apparatus, and for gas engine work, it is the custom to construct the armature 4 of non-laminated material. In other words to make it of one solid casting. Both ends of the armature 4 are provided with over-hanging extensions 11—11, which protect the wire and to which suitable cover plates 12—12, are secured. The cover plates 12—12 are each provided with a shaft extension, which shaft finds its bearings in the end plates 3—3. By virtue of this construction it will be seen that it is not necessary to have the shaft ends extend through the solid portion of the armature 4. A great difficulty experienced in this type of armature is that due to the generation of eddy or Foucault currents, which have a great tendency to retard the rotation of the armature. This is due to the closed path provided by the armature to such currents. To avoid the effect of these excessive Foucault currents I so construct the armature that the closed circuit path thus provided is broken, and therefore these currents do not have the same facility for a complete circuit, and they are, therefore, not generated in objectionable amount. This is accomplished by virtue of my improved construction, which I will now describe.

The general cross section of the armature 4, is shown more in detail in Fig. 3. I take this armature 4 and saw slots 13—13 transversely across the axis of the armature, the cross sectional outline of which slots is more clearly shown in Fig. 4. It will thus be seen that the eddy currents which have a tendency to flow in a closed circuit longitudinally of the armature, meet obstructions in their paths due to these air recesses 13, and the resistance provided in this path in opposition to them is so great that they do not flow except very close to the axis of the armature, at which point they do little or no damage. These higher resistance obstructions to the path of the eddy currents in my improved device take the form of transverse slots 13, as above specified. The efficiency obtained from a machine of this kind is remarkable more especially when starting the machine, or when attempting to operate on open circuit or no load.

While I have herein shown and particularly described the preferred embodiment of my invention, I do not wish to limit myself to the precise construction and arrangement as herein set forth, but

Having thus set forth its most salient features what I claim as new and desire to secure by Letters Patent is:—

A magneto generator comprising permanent magnets, solid pole pieces for said permanent magnets, a solid metallic armature of magnetic material for operation adjacent to said pole pieces, non-magnetic me-

tallic end plates provided with shaft extensions secured to overhanging ends of said armature, said shaft extensions not extending through the armature proper, and a plurality of thin transverse slots for subdividing each one of the two opposite halves of said armature into a plurality of substantially independent magnetic portions, provided in each of the opposite halves of said armature to increase the resistance offered to the flow of eddy currents to thereby decrease the effort necessary in the rotation of said armature, a slot being located close to each of the ends of said armature.

In witness whereof, I hereunto subscribe my name this 31st day of March, 1908.

OSCAR M. LEICH.

Witnesses:

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