

No. 628,457.

Patented July 11, 1899.

M. GEHRE.

DEVICE FOR PRODUCING ELECTRIC CURRENTS AT SEA BY THE ACTION OF WAVES.

(Application filed Apr. 6, 1899.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

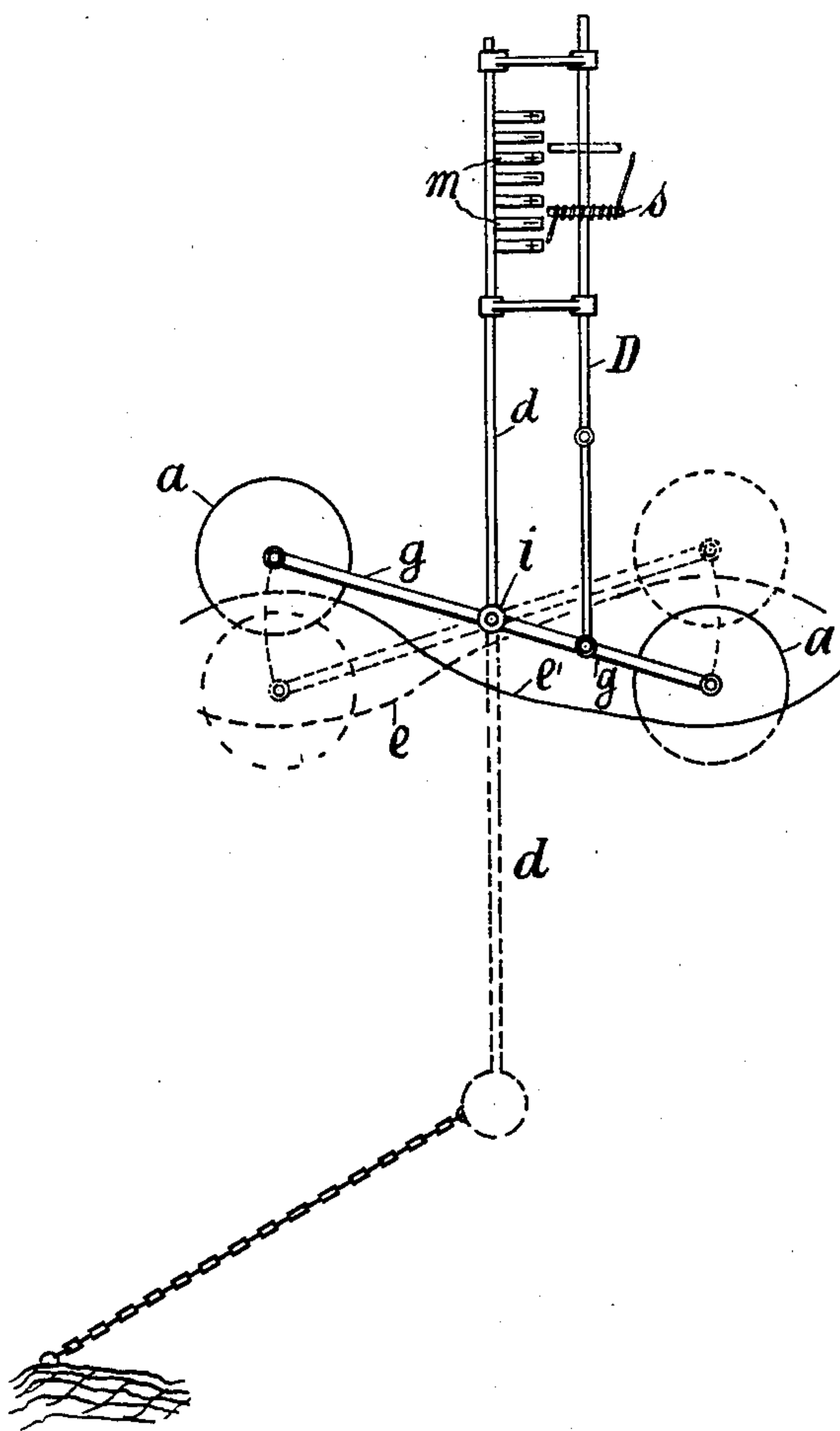
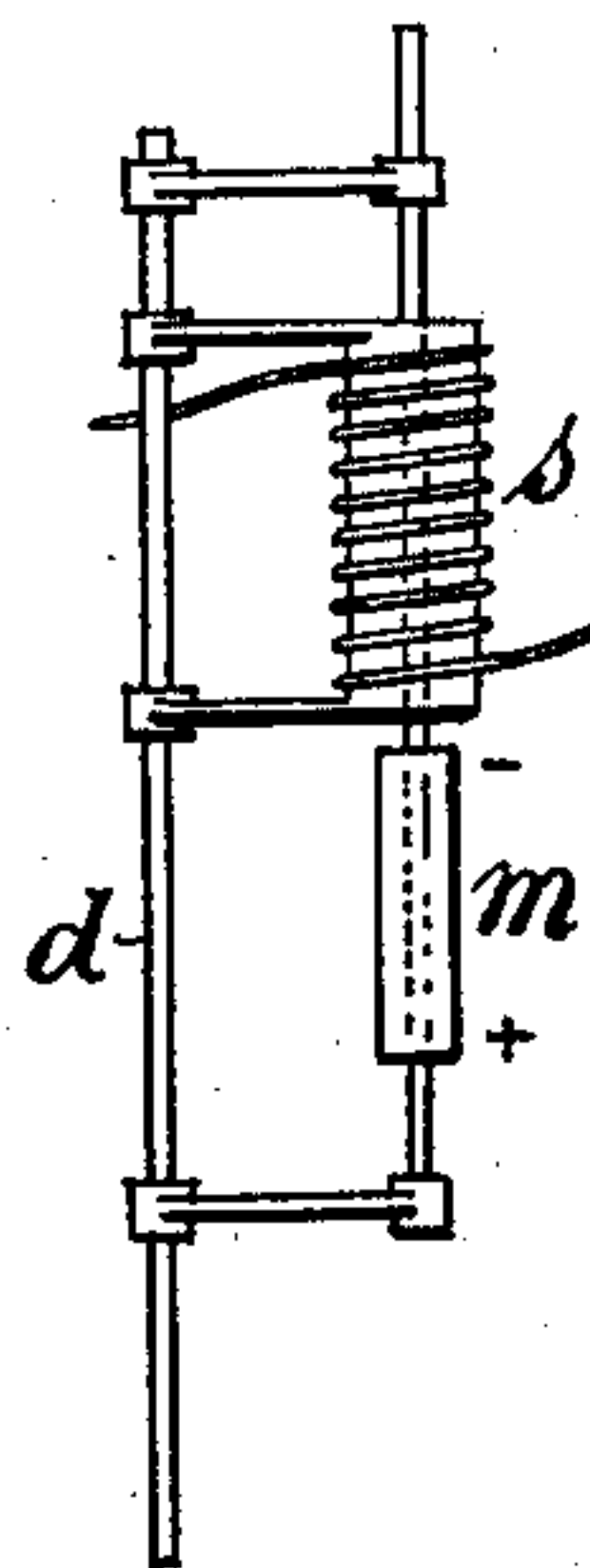


Fig. 2.



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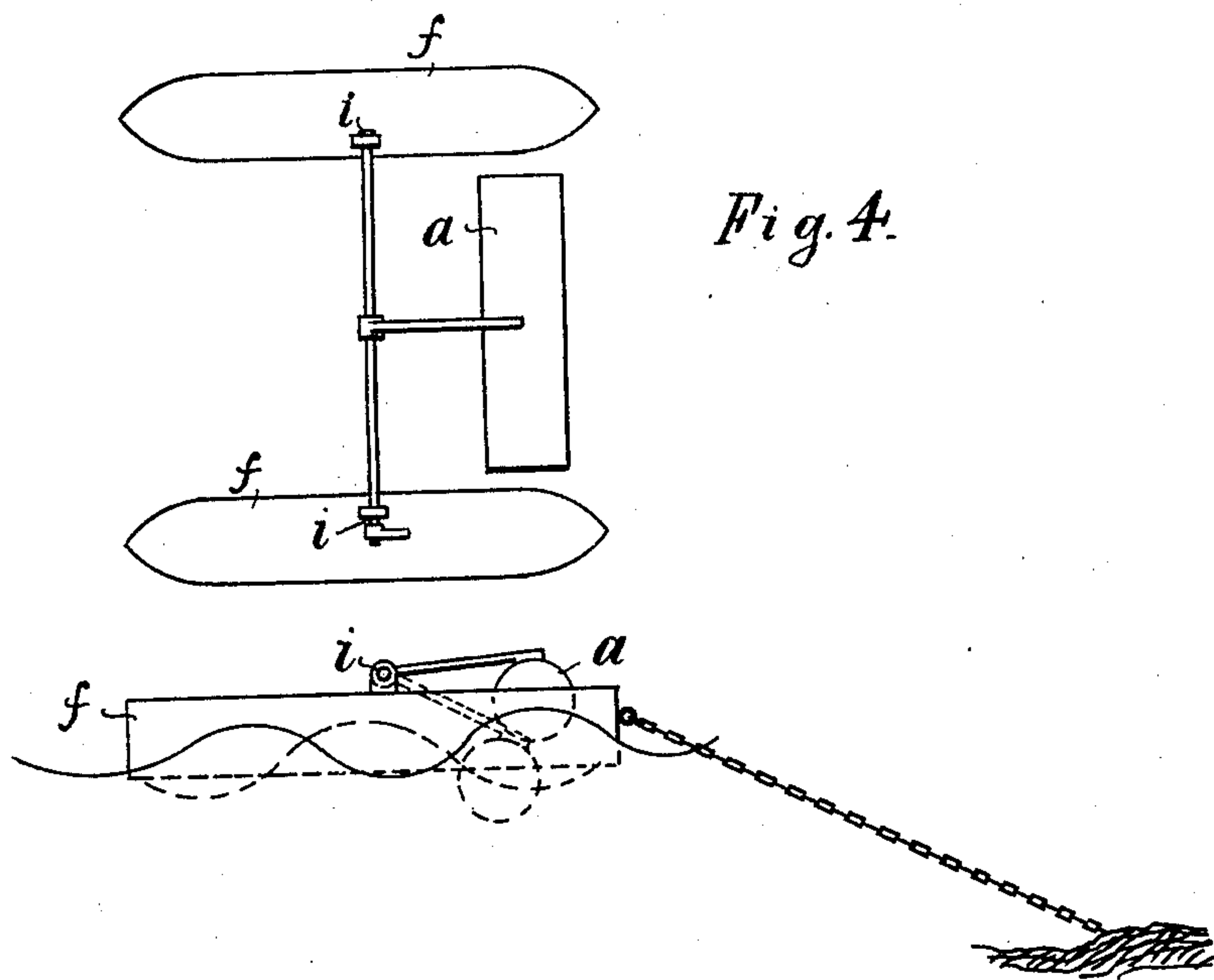
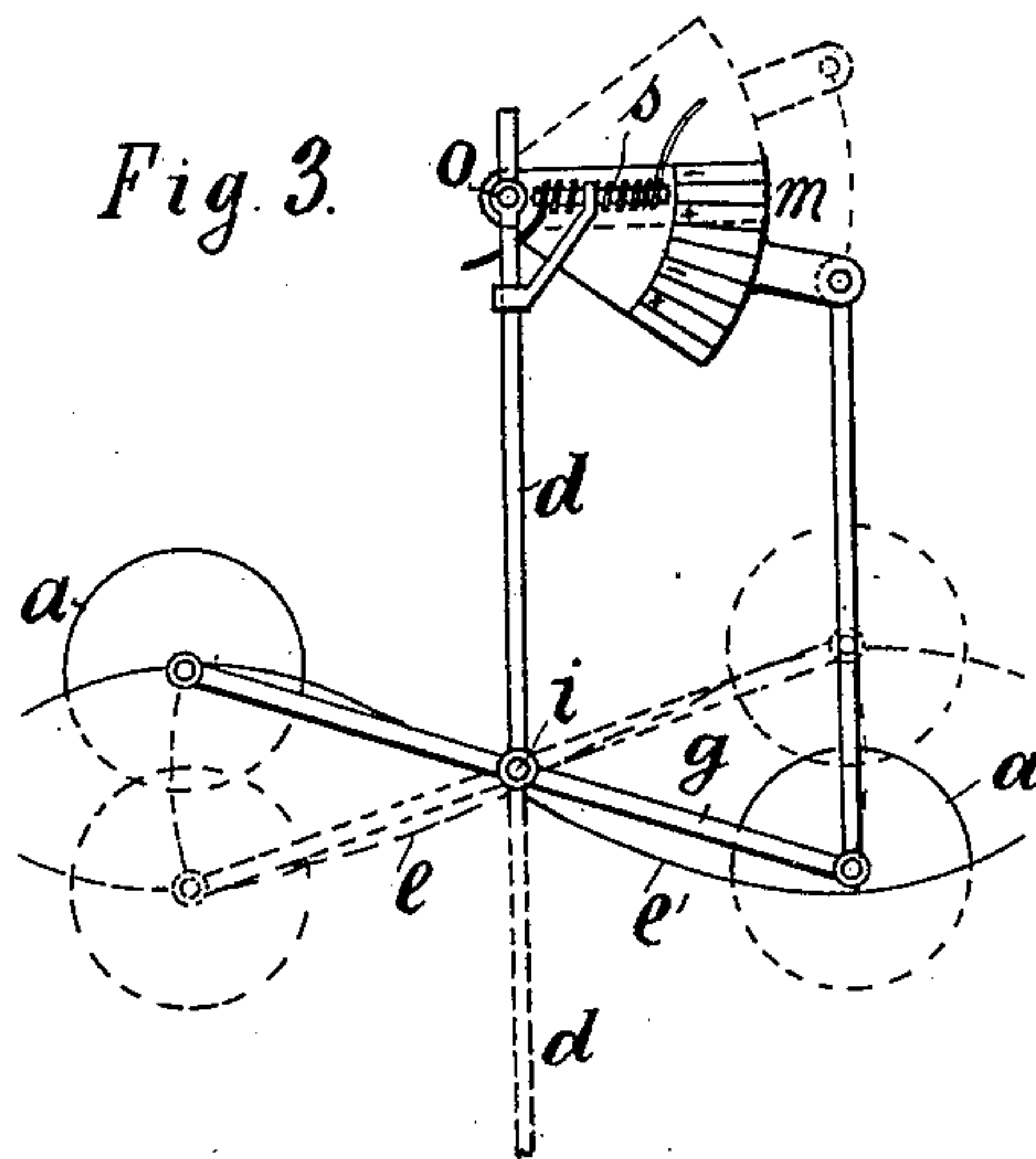
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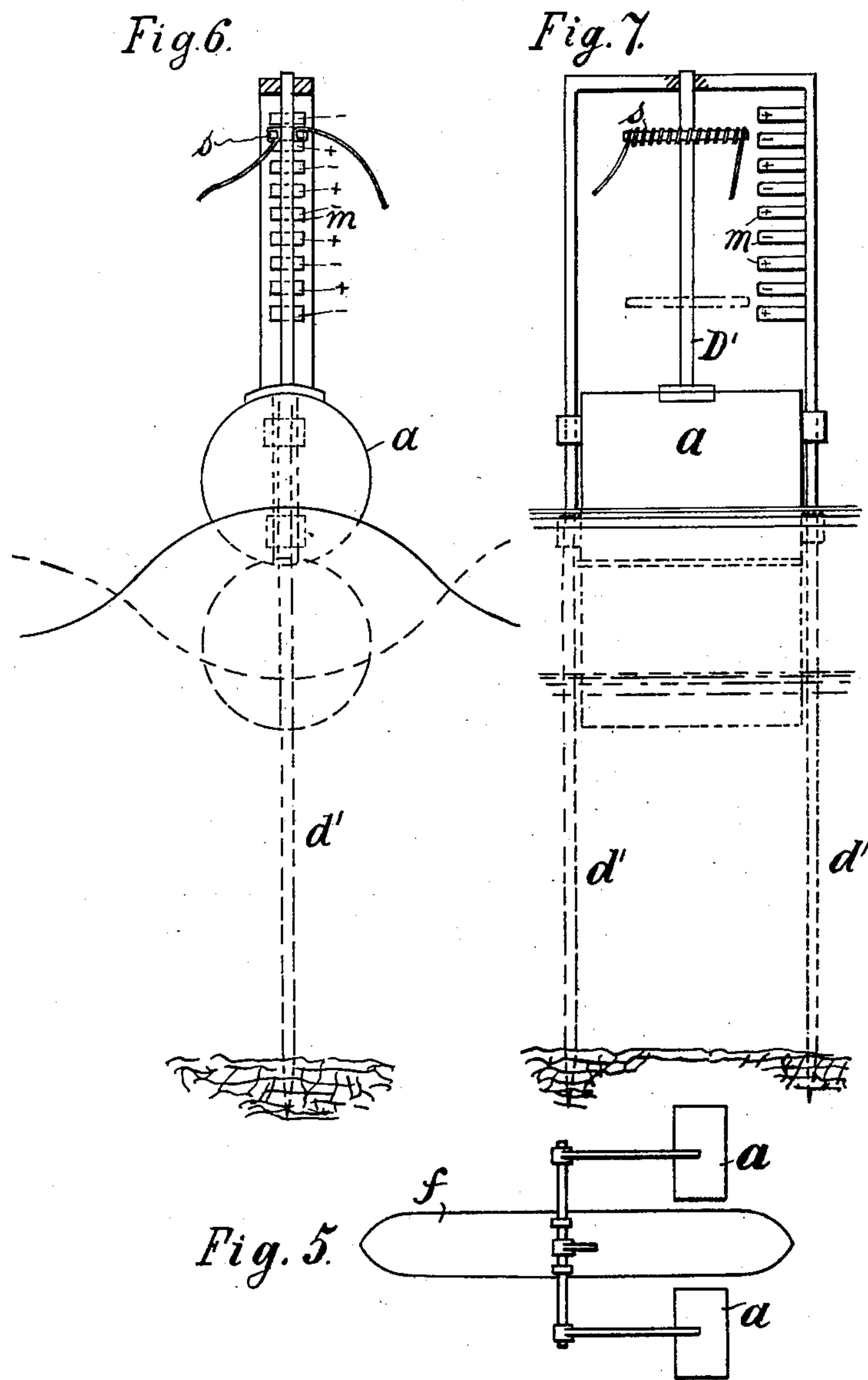
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3 Sheets—Sheet 3.



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MAX GEHRE, OF RATH, GERMANY.

DEVICE FOR PRODUCING ELECTRIC CURRENTS AT SEA BY THE ACTION OF WAVES.

SPECIFICATION forming part of Letters Patent No. 628,457, dated July 11, 1899.

Application filed April 6, 1899. Serial No. 711,947. (No model.)

To all whom it may concern:

Be it known that I, MAX GEHRE, engineer, a subject of the German Emperor, residing at Rath, near Dusseldorf, in the German Empire, have invented certain new and useful Improvements in a Device for Producing Electric Currents at Sea by the Action of the Waves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

For many purposes, more particularly for the production of flash-lights or the like at sea, it is desirable to produce electric current by simple mechanical means. According to the present invention this is effected by the transmission of the movement of the waves to suitable rods, through which without other intermediate gearing the displacement or movement of an induction-coil against a magnet or, vice versa, of a magnet against an induction-coil is effected and current thereby produced. The present apparatus is characterized by an arrangement of rods projecting out of the sea to a suitable extent, one of which rods carries at its upper end an armature or, rather, an induction-coil and the other a magnet with alternating poles, while between the two rods a connection is established by lever or guide connections in such a way that a rising and falling of the one rod is produced by the action of the waves by means of a float, and thereby a displacement of the induction-coil against the magnet, or vice versa, is brought about.

Figure 1 is a diagrammatic side elevation showing one form of my improved apparatus. Fig. 2 is a fragmentary side elevation showing a modification. Fig. 3 is a fragmentary diagrammatic side elevation showing another modification. Fig. 4 is a fragmentary plan view and a fragmentary diagrammatic side elevation showing another modification. Fig. 5 is a fragmentary plan view showing still another modification. Fig. 6 is a fragmentary side elevation showing in diagram another modification, and Fig. 7 is a fragmentary front view thereof.

Some examples of construction of such an apparatus are shown in the accompanying drawings. In the example shown in Figs. 1

to 3 a point of rotation i is arranged on an anchored rod or support-carrier d , on which point of rotation one or more floats a are arranged to turn in such a way that they are alternately raised and lowered by the waves e e' . The floats a are for this object connected one with the other by means of a lever g . The support or carrier d is connected by means of an anchor with the bottom of the sea and is supported by the floats a , so that the whole arrangement floats on the surface of the sea whether the tide is ebbing or flowing, as the length of the anchor-chain admits of this. By the rocking movement of the floats a a lever action against the support d is obtained and conveyed from the lever connection g by means of a second rod D to an electric-current producer. This electric-current producer consists of an induction-coils, mounted at the top of the rod D , which induction-coil is arranged in such a way, as against the magnet m , that the adjacent poles of the magnet are of opposite polarity. In the coil there is an iron core. By the movement of the floats the coil s is moved to and fro in front of the poles of the magnet, and thereby an electric current is produced. The magnets may of course be moved in front of the coil.

Fig. 2 shows a modification in which a magnet may be displaced or removed as regards the induction-coil.

Fig. 3 shows an example in which the magnets may oscillate on a point of rotation around the coils, and thereby produce current in the latter.

In place of the rods or supports d floating bodies f , such as are shown in Figs. 4 and 5, may also be employed, on which bodies the floats a are so arranged that they receive from the waves a swinging movement relative to the floating bodies f , which movement also serves for producing an electric current like that produced by the arrangement shown in Figs. 1 to 3.

Figs. 6 and 7 show an arrangement for use in those parts of the sea where there is little ebb and flow. Here the supports or rods d' are fixed in the bottom of the sea. The floating body a and its rod D' are mounted on the support d' in such a way that the waves of the sea raise and lower the same. This move-

ment is also utilized similarly to the other examples for producing an electric current. Of course floats *a*, such as shown in Figs. 1 to 5, may also be arranged on the fixed rods or supports, such as shown in Figs. 6 and 7.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

10 1. In combination with floats moved by the waves of the sea, rods projecting from the sea, one of which rods carries at its upper end an armature with an induction-coil, and the other
15 as described.

2. In combination with floats moved by the waves of the sea, rods projecting from the sea, one of which rods is moved by the float or floats one of said rods carrying an armature with an induction-coil at its upper end and 20 the other a magnet with alternating poles substantially as described and with the object set forth.

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

MAX GEHRE.

Witnesses:

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GEO. P. PETTIT.