

No. 746,278.

PATENTED DEC. 8, 1903.

W. BROAD.
ELECTRIC TOY MOTOR.
APPLICATION FILED OCT. 5, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

FIG. 1.

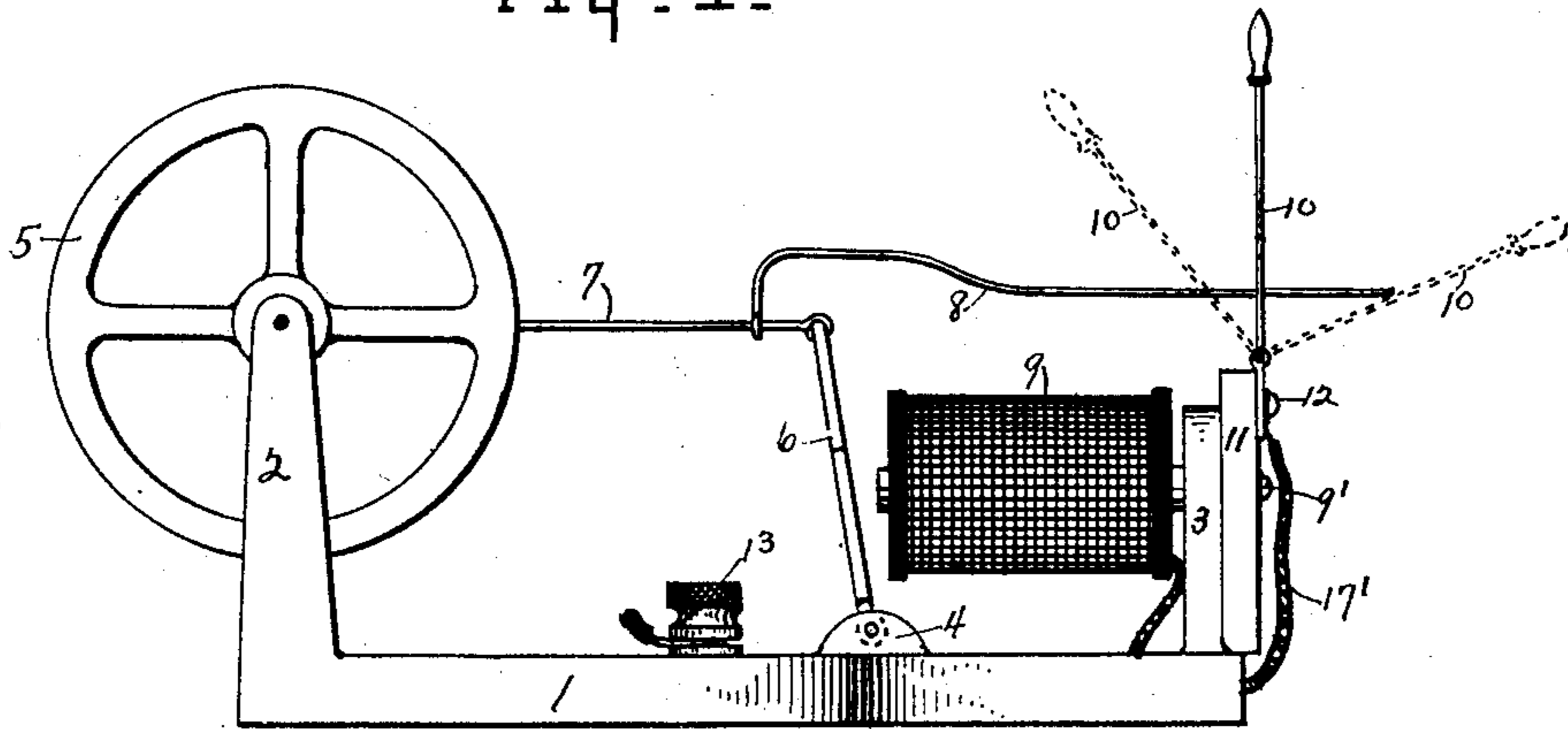


FIG. 2.

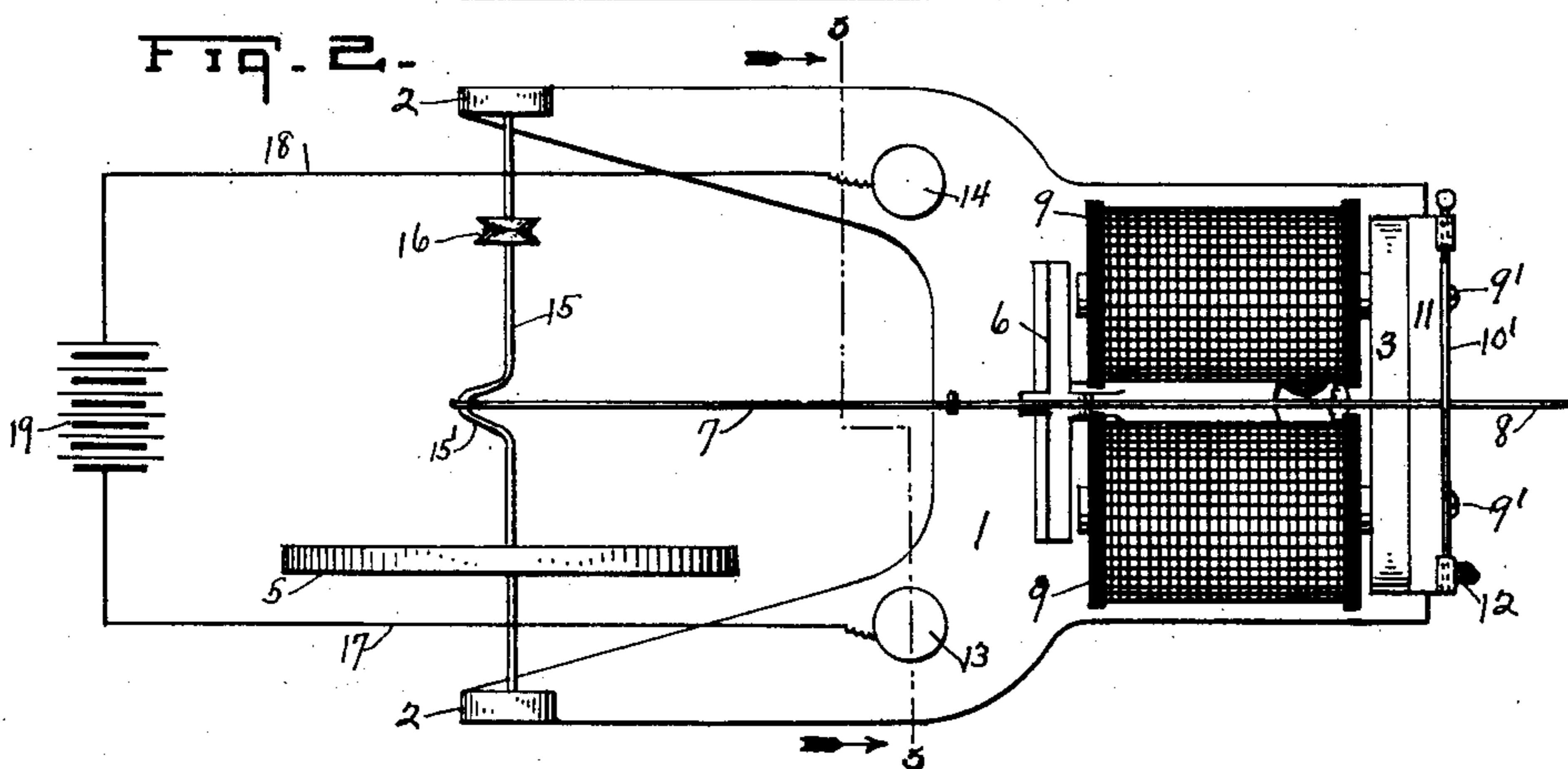
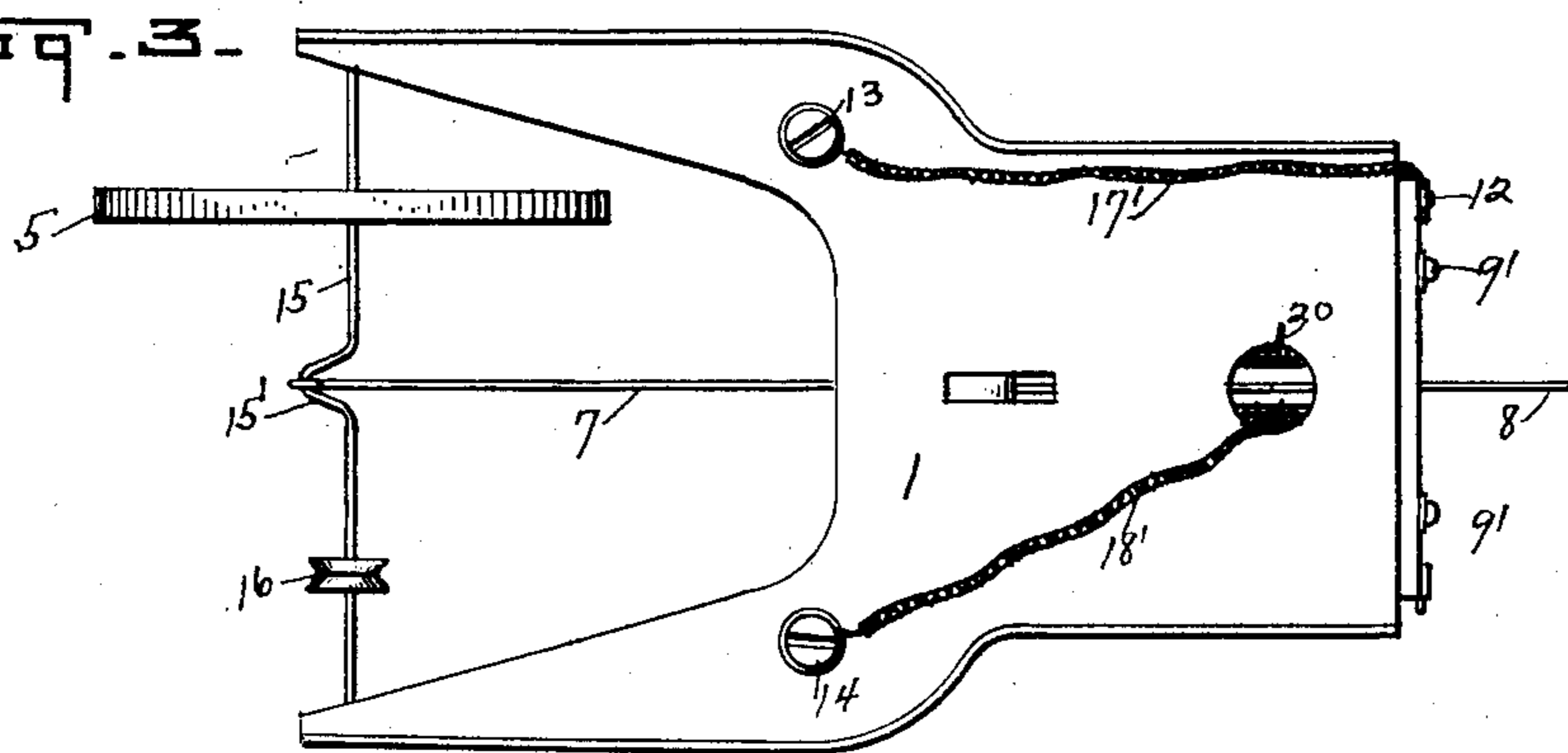


FIG. 3.



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2 SHEETS—SHEET 2.

FIG. 4.

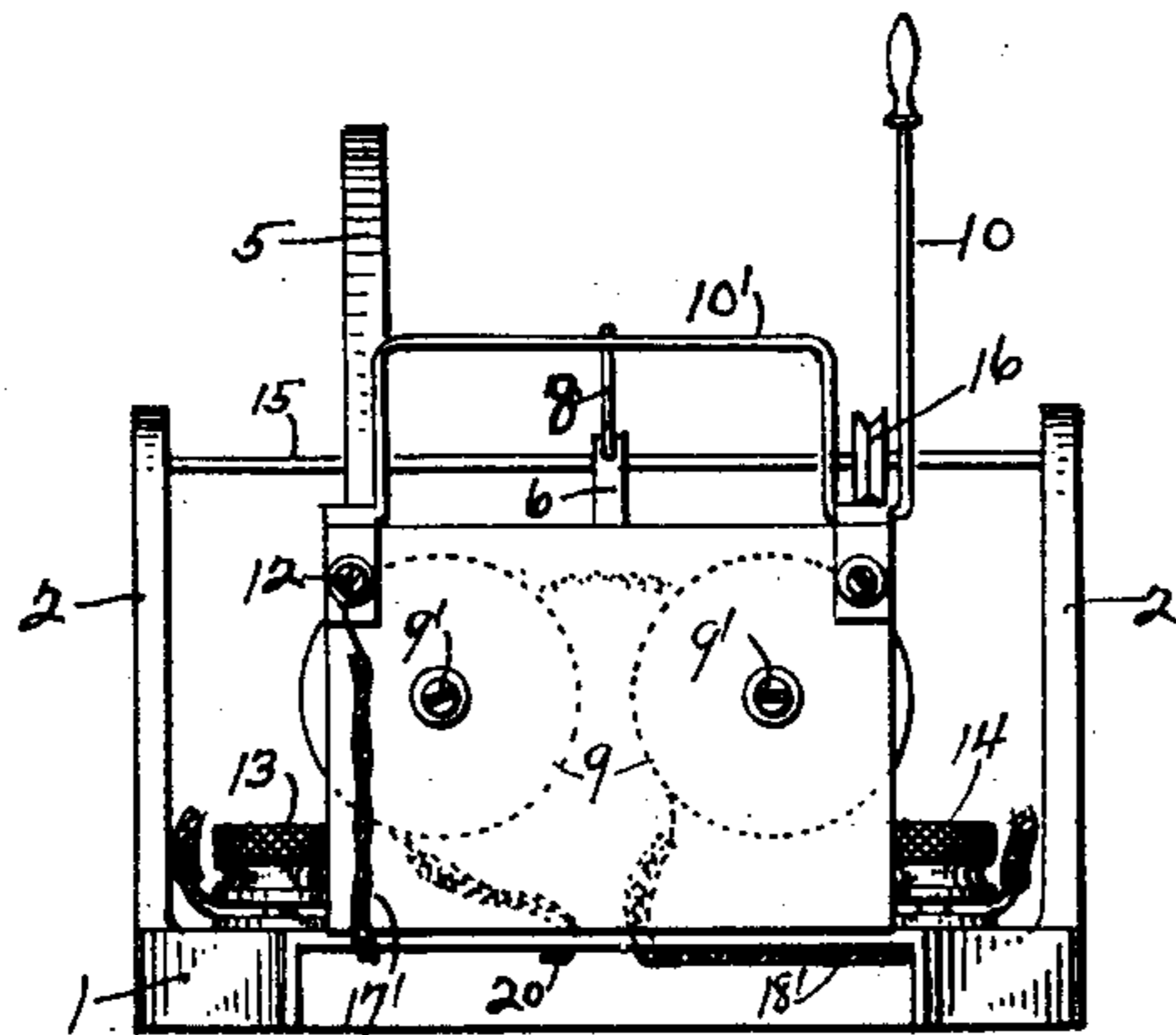


FIG. 5.

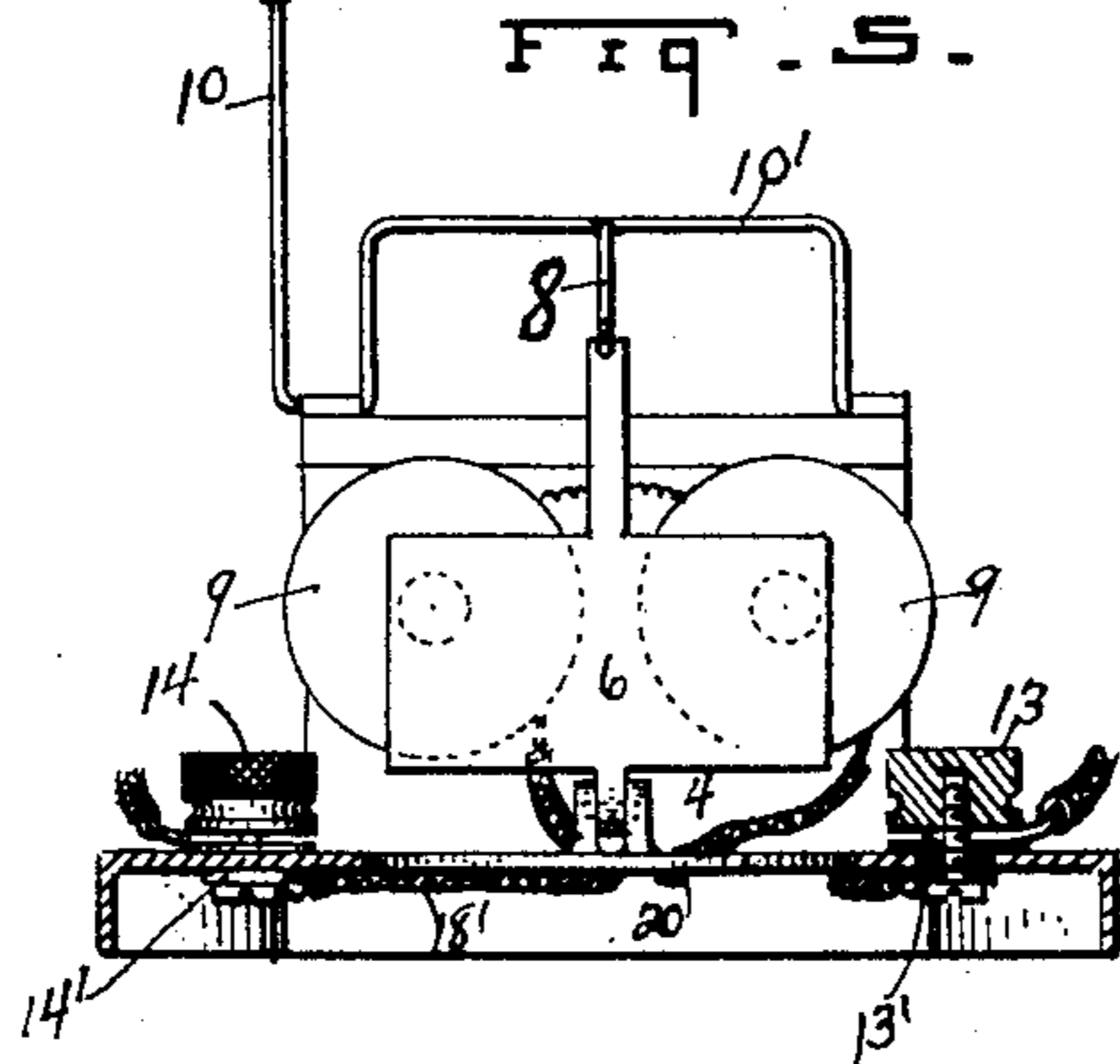
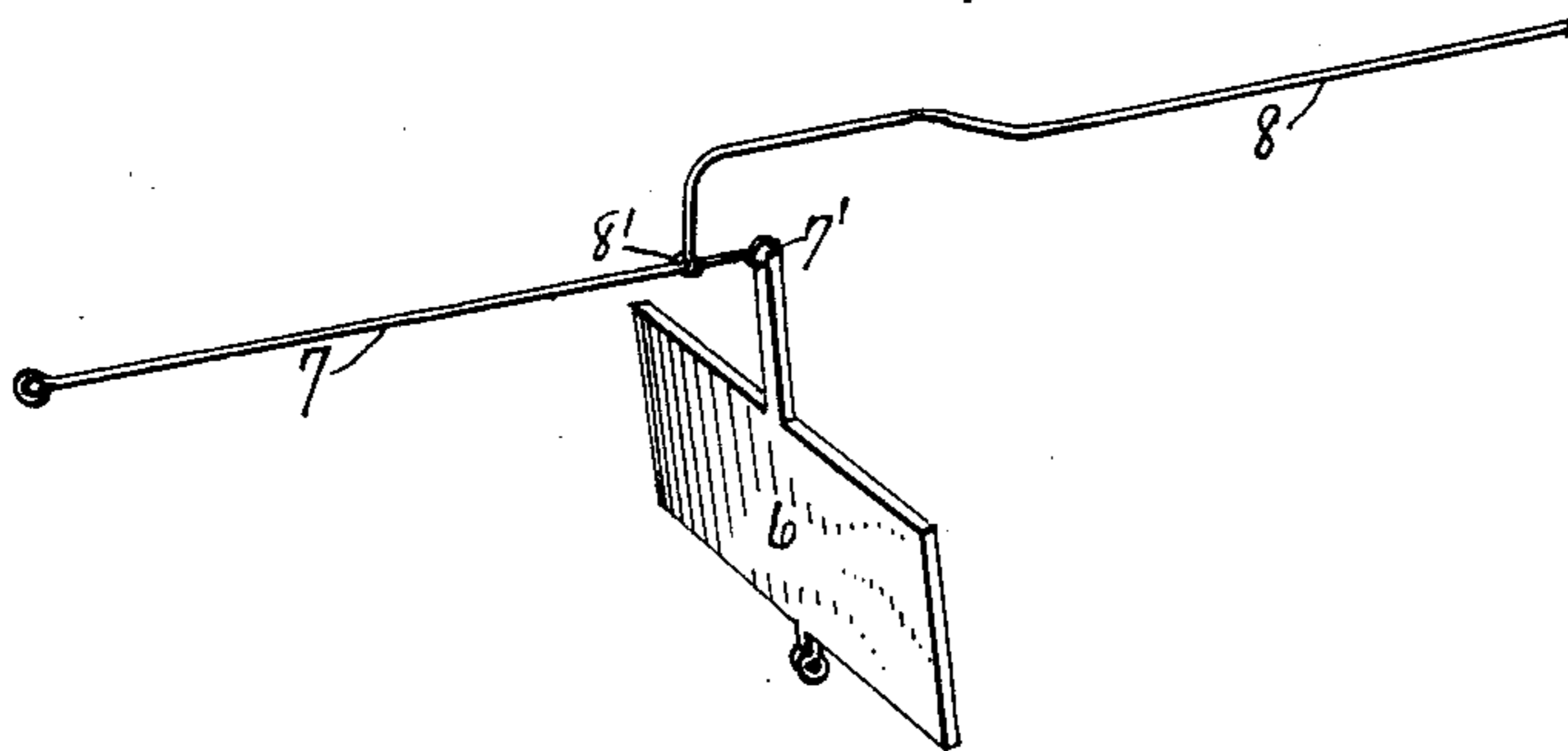


FIG. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM BROAD, OF BEAVERFALLS, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO WILLIAM J. CRAWFORD, OF BEAVERFALLS, PENNSYLVANIA.

ELECTRIC TOY MOTOR.

SPECIFICATION forming part of Letters Patent No. 746,278, dated December 8, 1903.

Application filed October 5, 1903. Serial No. 175,720. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BROAD, a citizen of the United States, residing at Beaverfalls, in the county of Beaver and State of Pennsylvania, have invented certain new and useful Improvements in Electric Toy Motors, of which the following is a specification.

This invention relates to the class of inventions known as "electric toy motors," constructed on a simple, practical, and inexpensive basis, principally for the amusement of children, and is designed to take the place of steam-propelled toy engines, being much safer to handle and more cleanly.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation of my toy motor, the movement of the controlling-lever being shown by dotted lines. Fig. 2 is a top plan view of my toy motor. Fig. 3 is a bottom view of the same. Fig. 4 is an end view. Fig. 5 is a cross-sectional view taken on the line 5 5 of Fig. 2, and Fig. 6 is a perspective view of the armature and connecting-rods used in the construction of my motor.

The numerals of reference designate like parts throughout the several views, in which—

The numeral 1 is the bed-plate, having the upright posts 2 formed on one end.

3 is the upright support for the magnets, formed on the opposite end of the bed-plate.

4 represents small uprights formed in the center of the bed-plate.

5 is the fly-wheel, mounted on a crank-shaft 15.

6 is a rocking armature seated in the small uprights 4 and pivotally connected at the top by a rod 7, said rod 7 being connected at the opposite end to the crank on the shaft 15.

8 is a curved controlling contact-rod rigidly connected at one end to the rod 7.

9 represents the electromagnets, two in number, secured to the upright 3, being held in position by the screws 9', extending through the insulating-board 11.

10 is the controlling-lever fastened to the insulating-board 11, being shaped to form a contact-bar 10'.

12 is a screw fastening one side of the controlling-lever 10 to the insulating-board 11

and also securing the end of the conducting-wire 17'.

13 is a screw-post connecting the wire 17 to the bed-plate and insulated from the same at 13'.

14 is a screw-post connecting the wire 18 to the bed-plate and insulated therefrom at 14'.

16 is a pulley-wheel mounted on the crank-shaft 15.

17 is the conducting-wire leading from the positive pole of the battery 19 through the post 13 to the controlling-lever 10.

18 is the conducting-wire leading from the negative pole of the battery 19 through the post 14 to the magnets 9, said magnets being connected to the metallic conducting portion of the bed-plate at 20. When the wires attached to the battery are connected with the posts 13 and 14 on the bed-plate of the motor, a current of electricity is carried to the magnets 9 by wire 18' and runs through the two magnets, being led out to connection 20 upon the metallic conducting portion of base-plate 1, along which the circuit continues to the support 4, and then upwardly through the armature 6. From the armature 6 the circuit is completed through rod 8, contacting rod 10', binding-post 12, and negative wire 17', back to the post 13, and then to the battery 19.

In order to start the motor to running, all that is necessary is to give the fly-wheel 5 a couple of revolutions by hand, and as the wheel moves forward the connecting-rod 7, attached at one end to the crank-shaft and at the other end to the armature 6, is pulled forward, thus drawing the armature 6 away from the magnets 9 and at the same time pulling the controlling-contact 8 from the bar 10' of the controlling-lever 10, and when once started the electric power emanating from the battery by forces well known to persons skilled in the science of electricity carries on the operation. The rod 7 being fixed on a pivot at 7' and to the crank-shaft at 15', an up-and-down movement is given to the rod 7, diminishing, however, as it approaches the pivotal point 7', and as the rod 8 is rigidly fixed to the rod 7 at 8' an up-and-down movement is also given said rod 8, so that at each revolution of the crank 15' two moves are given the rods 7

and 8—one upward and the other downward. A connection and disconnection is thus made of the rod 8 to and from the under side of the bar 10' by said operation. This movement
 5 when started, as aforesaid, is controlled by the armature 6, and the electric force of the magnets continues the revolutions of the balance or fly wheel 5 while the electric battery is effective or until a close-down or cut-off is
 10 made. In order to increase the speed of the fly-wheel, the controlling-lever 10 is brought down from a perpendicular position to an angle of about forty-five degrees, as indicated by the handle in dotted lines of Fig. 1. This
 15 shortens the stroke of the contact-rod 8 against the under side of the bar 10' and accelerates the movement of the armature and fly-wheel. The pulley-wheel 16 is to be used for further operations of a toyish nature by means of a
 20 connecting-string or the like.

Having thus fully shown and described my invention, what I claim as new, and desire to secure by Letters Patent, is—

- 25 1. In an electric toy motor, the connecting-rod 7, contact-rod 8 and armature 6, combined and operated with the crank 15' on the shaft 15; a fly-wheel mounted on said shaft, and the electromagnets 9; substantially as described and shown.
- 30 2. In an electric toy motor, the connecting-rod 7 contact-rod 8 and armature 6 in combination with the crank 15' on the shaft 15; a

fly-wheel mounted on said shaft; electromagnets 9 and the controlling-contact bar 10' operated by the lever 10; substantially as described and shown. 35

3. In an electric toy motor, the combination of the connecting-rod 7; contact-rod 8; armature 6; electromagnets 9; operating-lever 10, having bar 10', fixed to insulating-board 11; 40 shaft 15, having the crank 15', seated in the upright posts formed integral with the bed-plate; substantially as described and shown.

4. In an electric toy motor, the combination of the bed-plate 1; uprights 2, formed integral with said bed-plate; shaft 15, seated in the uprights, and having crank 15' formed thereon; pulley-wheel 16, mounted on the shaft 15; rod 7 loosely fixed to the crank 15' at one end and pivotally connected to the ar- 50 mature 6; contact-rod 8 rigidly fixed to the rod 7 near its pivotal point; armature 6 seated in the uprights 4; electromagnets 9 secured to the upright 3; insulated connecting-wires; and the controlling-lever 10 having a 55 contact-bar 10'; substantially as described and shown.

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

WILLIAM BROAD.

Witnesses:

GEORGE WILD,
 JOS. C. ROUZER.