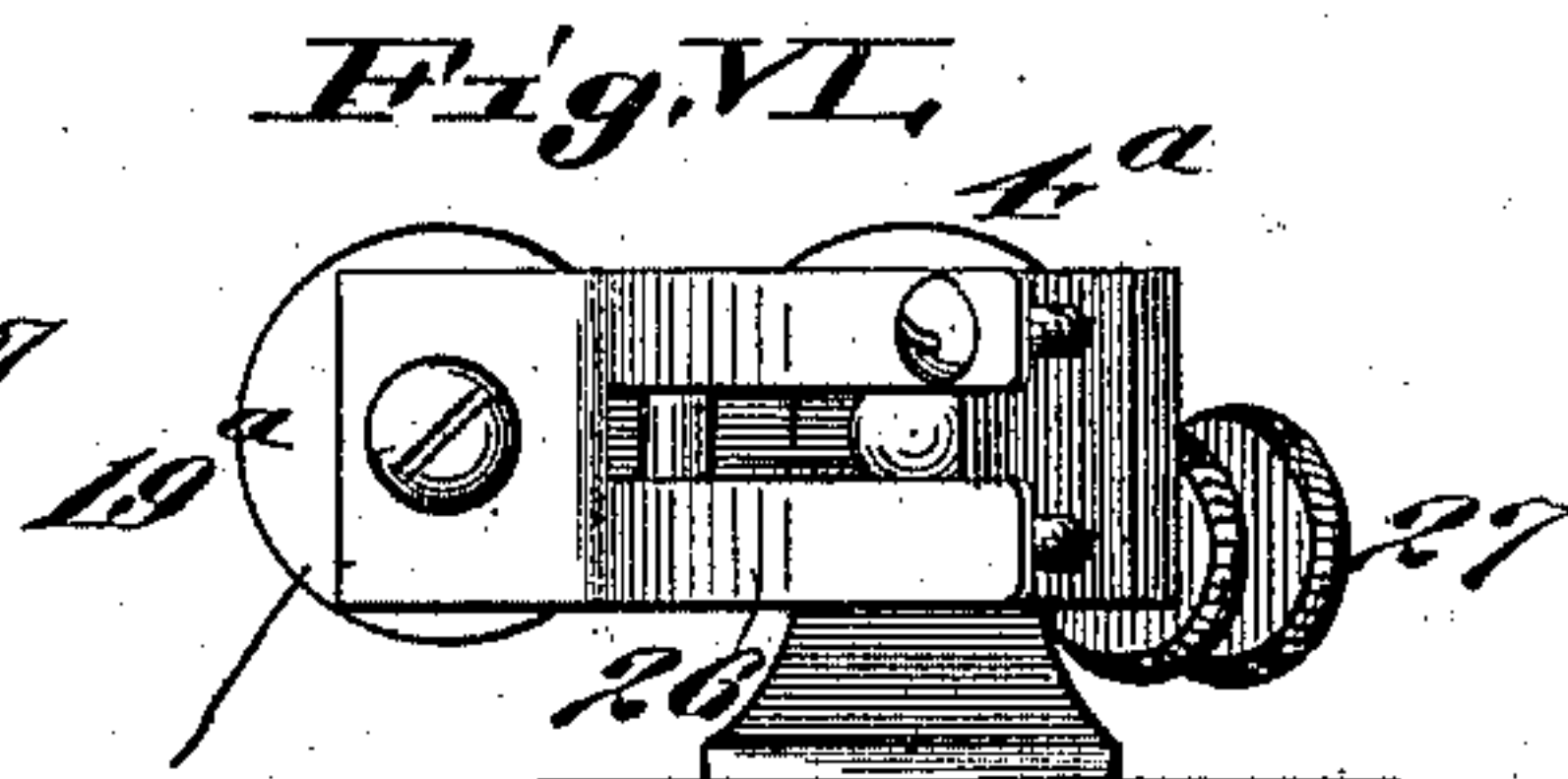
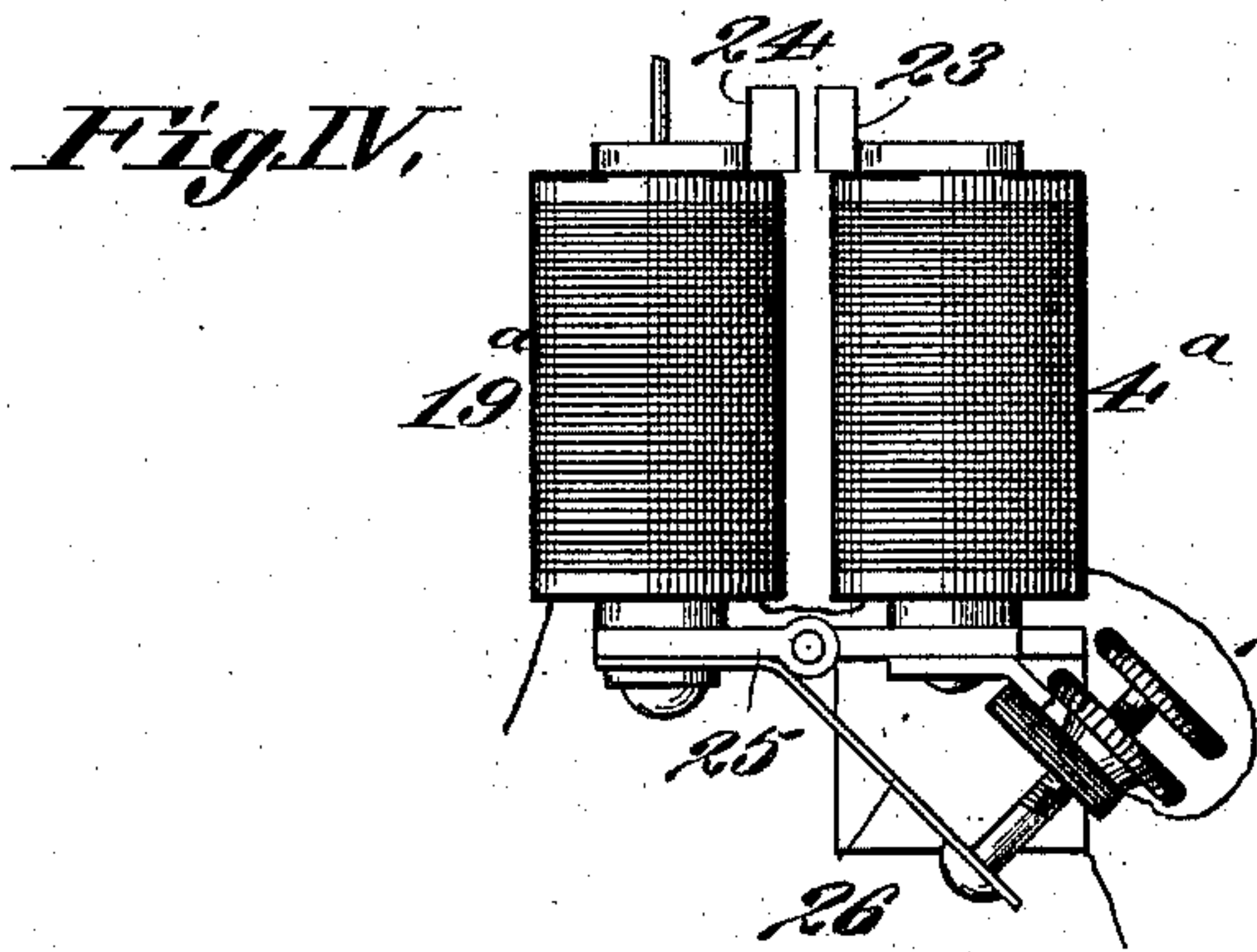
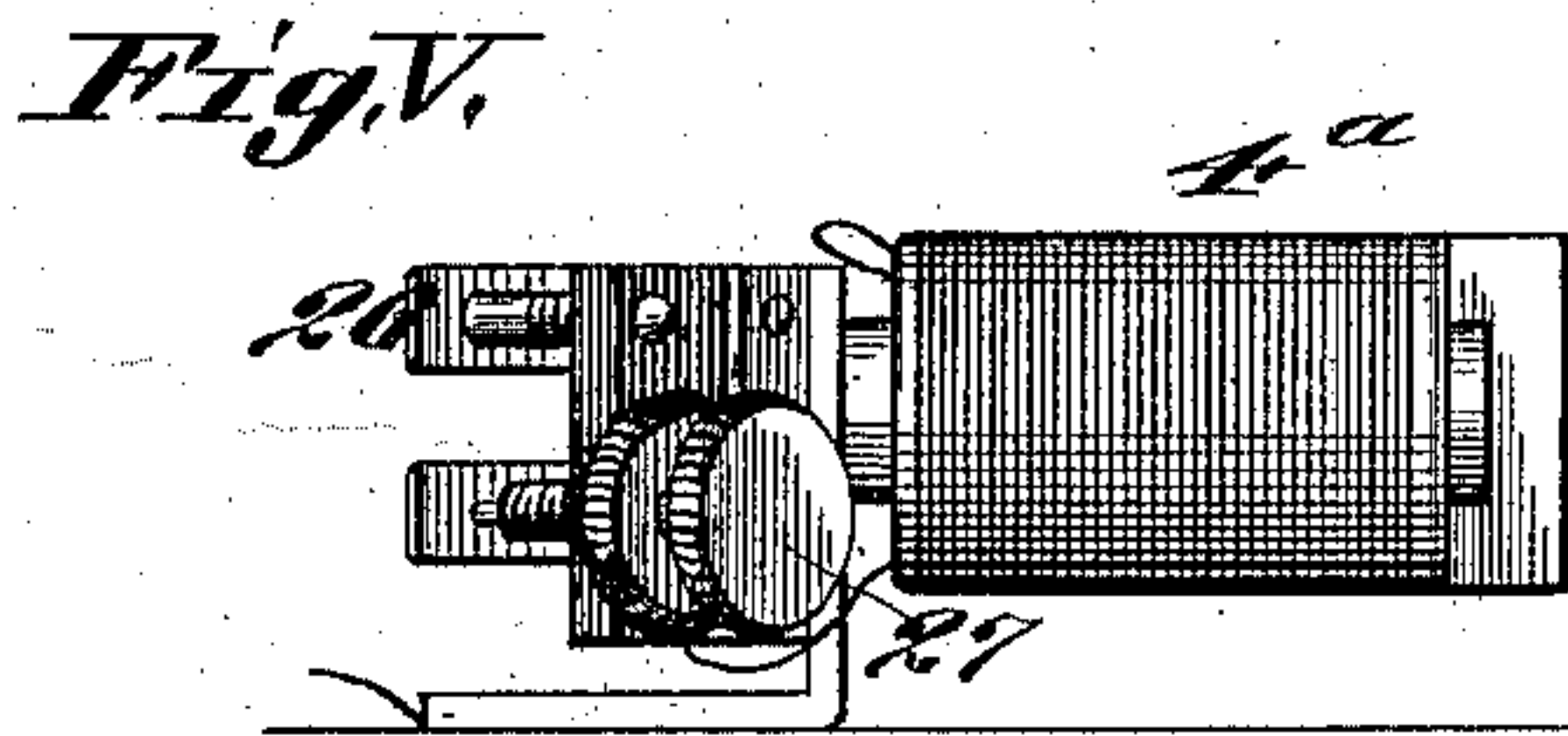
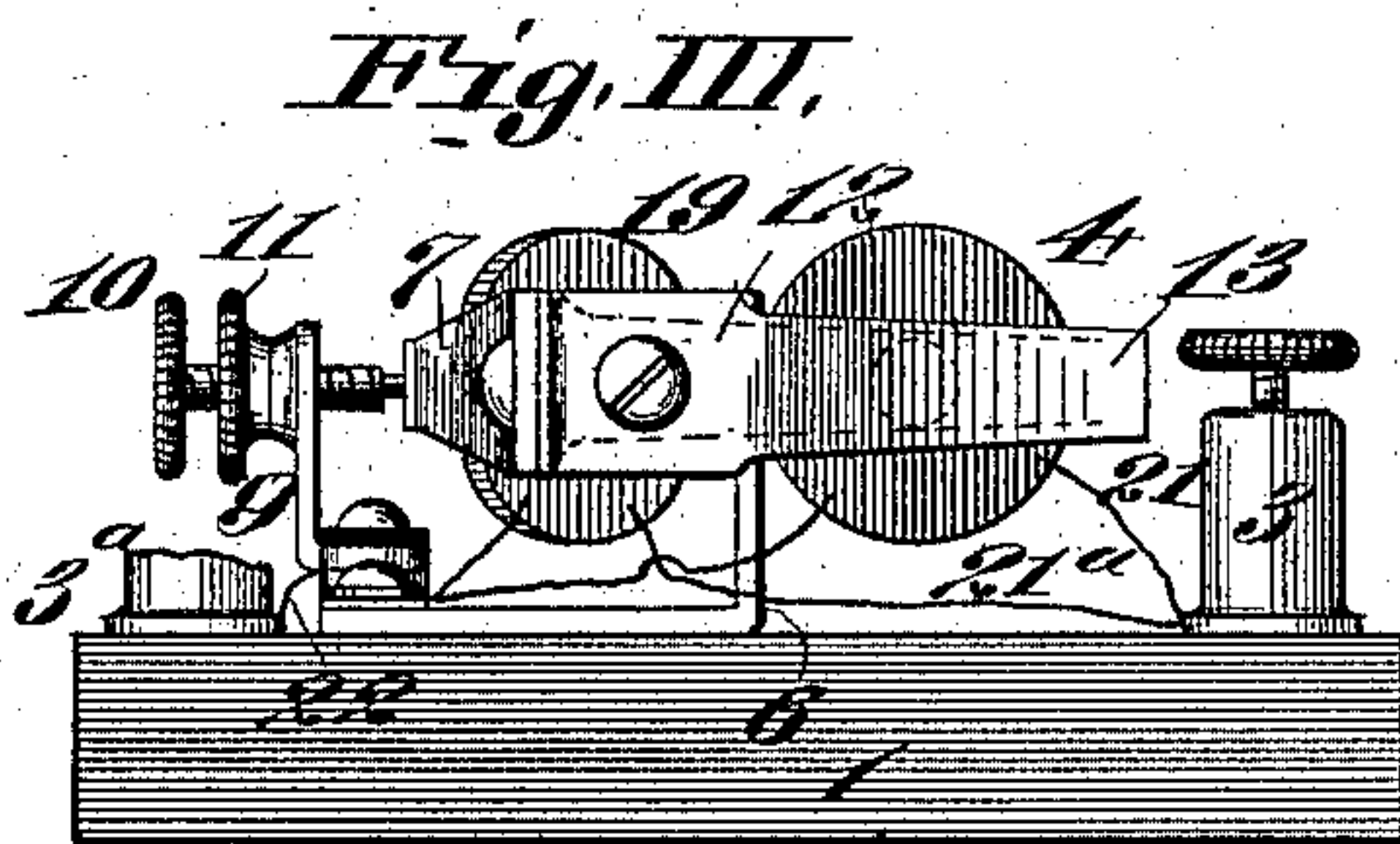
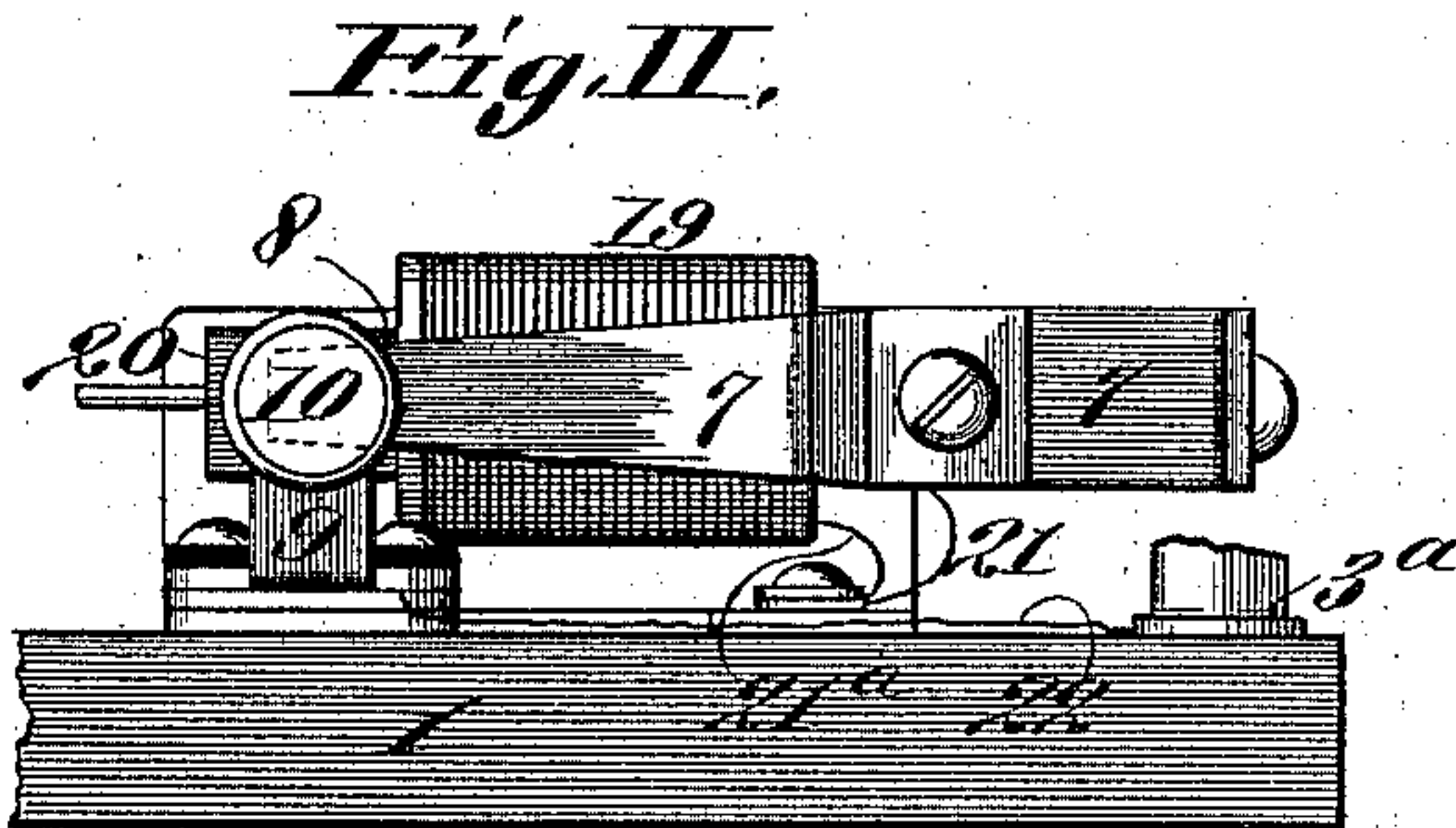
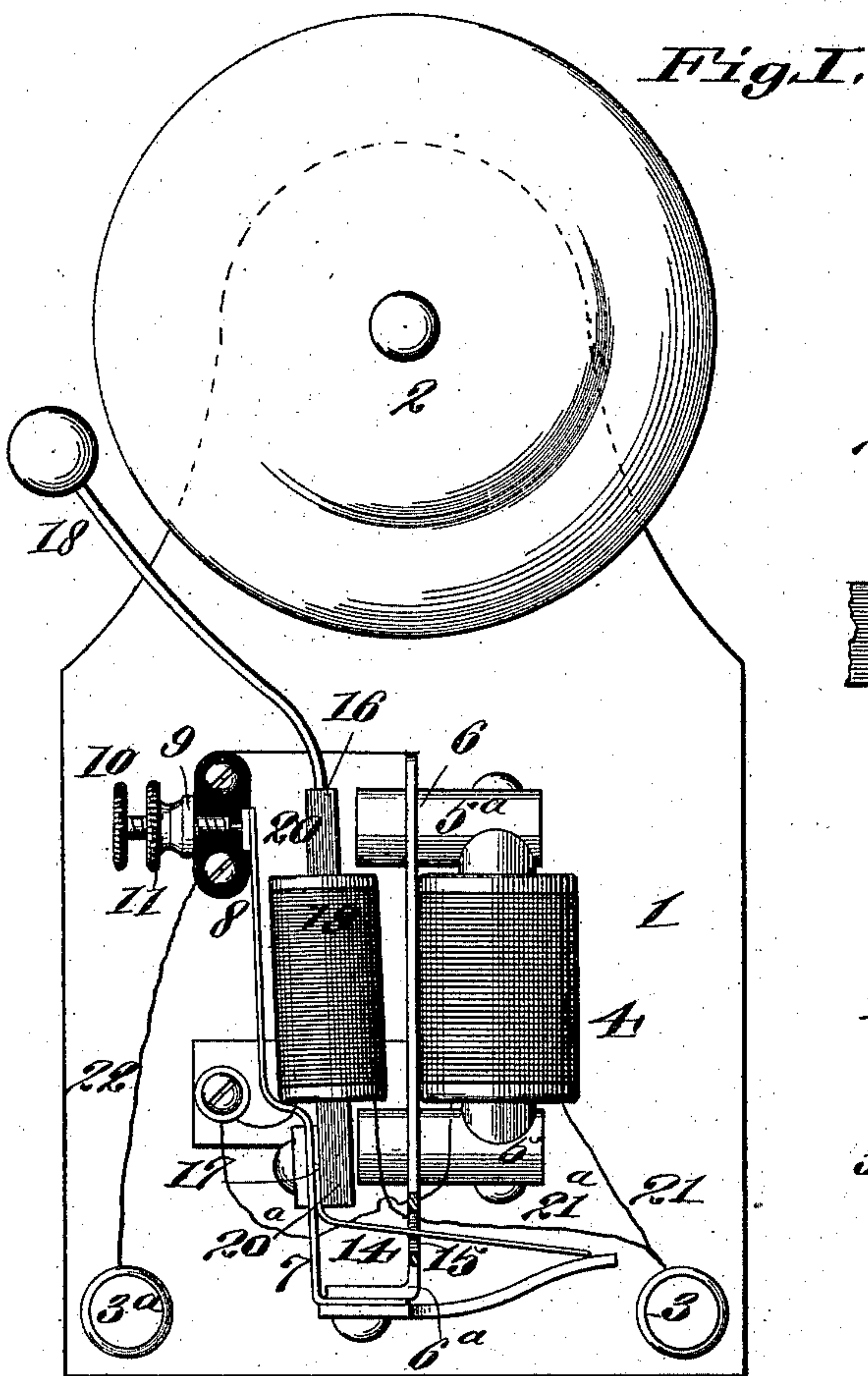


(No Model.)

J. W. HOLDSWORTH.  
ELECTRIC BELL.

No. 575,156.

Patented Jan. 12, 1897.



Attest:  
E. Knight  
R. Finley.

Inventor:  
John W. Holdsworth  
By Wright Bros  
Attys



# UNITED STATES PATENT OFFICE.

JOHN W. HOLDSWORTH, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF  
TO ROBERT R. DODSWORTH, OF SAME PLACE; ROBERT R. DODSWORTH  
ADMINISTRATOR OF SAID HOLDSWORTH, DECEASED.

## ELECTRIC BELL.

SPECIFICATION forming part of Letters Patent No. 575,156, dated January 12, 1897.

Application filed April 9, 1896. Serial No. 586,772. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN W. HOLDSWORTH, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Electric Bells, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to an electric bell in which a stationary electromagnet is combined with an electromagnet wound upon a vibrating armature; and my invention consists in features of novelty hereinafter fully described, and pointed out in the claim.

Figure I is a top view of my improved bell. Fig. II is a side elevation. Fig. III is a rear end view. Fig. IV is a top view of a modification. Figs. V and VI are respectively a side elevation and a rear end view of the modified form shown in Fig. IV.

In the drawings, 1 designates the base, and 2 the bell mounted thereon.

3 3<sup>a</sup> designate the binding-posts.

4 designates a stationary electromagnet-spool provided with extension pole-pieces 5 5<sup>a</sup>, either one of which might be the positive and the other the negative, according to the direction in which the spool is wound.

6 designates a bar, to the end 6<sup>a</sup> of which is secured a spring contact-plate 7, having a free end 8.

9 is a post that supports a contact-screw 10, provided with a set-nut 11. The point of the screw 10 is presented to the contact-plate 7.

12 designates an arm secured to the bar 6, the free end 13 of which arm is impinged by a flat spring 14, carried by the contact-plate 7, said spring 14 passing through an opening 15 in the bar 6.

16 designates the armature-lever, secured at 17 to the contact-plate 7 and carrying at its free end a bell-hammer 18.

On the armature-lever is wound an electromagnet-spool 19, at the ends of which the inclosed portions 20 20<sup>a</sup> of the armature-lever form positive and negative pole-sections.

The spools 4 and 19 are wound in reverse directions, and the consequent result is that the poles of one spool are located at opposite ends from that of the other spool and the pole of one name of one magnet opposite the

pole of the other name of the other magnet. This arrangement brings the two poles of each electromagnet within the magnetic field and causes the armature-lever to be drawn toward the stationary electromagnet with much greater force than in the ordinary construction where the poles of the same name of the two magnets face the armature-lever.

21 21<sup>a</sup> designate the line-wires, which lead, respectively, to the electromagnet-spools 4 and 19, and 22 is the return-wire.

In the operation of the bell the electric current enters the electromagnet-spools 4 and 19 by passing over the line-wires 21 21<sup>a</sup>, and the magnetism induced in the spools causes the attraction of the pole-sections of the armature-lever to the pole-pieces of the magnet-spool 4.

By bringing the respective poles of the movable core into contact with those of opposite sign of the fixed core the magnetic circuit is closed through the two cores and the magnetic attractive force greatly increased.

In the modified form of device shown in Figs. IV, V, and VI, the electromagnet-spools 4<sup>a</sup> and 19<sup>a</sup> are wound in opposite directions, whereby the pole-piece 23 of the stationary magnet-spool 4 is rendered of opposite name to the pole-piece 24 of the movable armature-magnet 19<sup>a</sup>. In this form the spools are connected by a leaf-hinge 25, and the movement of the spool 19<sup>a</sup> is limited by a spring 26, held by a set-screw 27.

I claim as my invention—

In an electric bell, the combination of a fixed electromagnet comprising a bobbin and core, and a movable electromagnet comprising a bobbin mounted upon a vibrating core, arranged parallel respectively to the fixed bobbin and core and having both the poles of said vibrating core arranged in magnetic relation to the poles of the fixed core of opposite sign; lateral extensions being provided on both the poles of one of the cores and at right angles thereto so as to bridge the space by which the cores are held apart by the bobbins and bring said cores in contacting relation, and thus close the magnetic circuit between them, as explained.

JOHN W. HOLDSWORTH.

In presence of—

E. S. KNIGHT,  
W. FINLEY.