

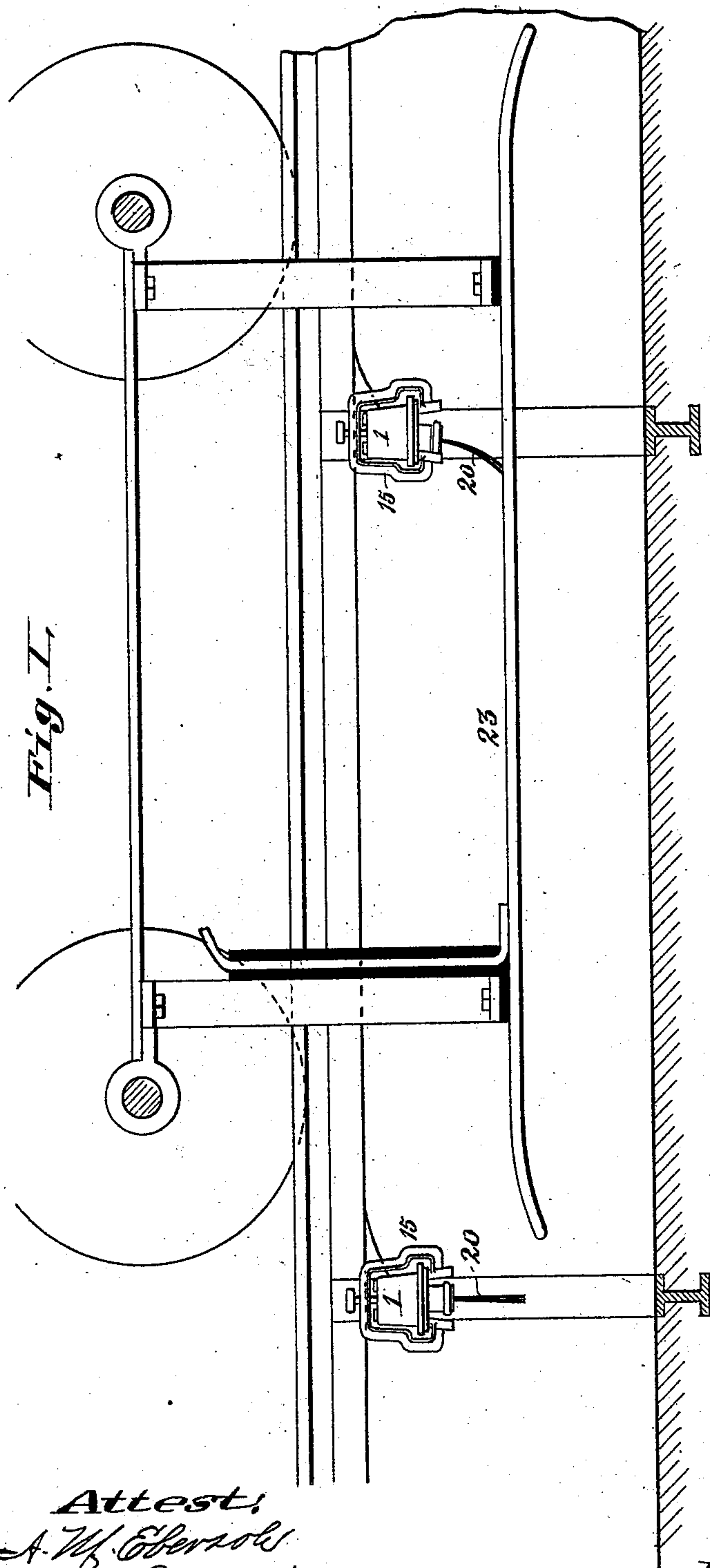
(No Model.)

2 Sheets—Sheet 1.

C. H. HARKINS.
SUPPLY SYSTEM FOR ELECTRIC RAILWAYS.

No. 528,477.

Patented Oct. 30, 1894.



Attest:
A. W. Ebersole
C. G. Edwards

Inventor:
Chas. H. Harkins
By *Knight Bros* *Attys*

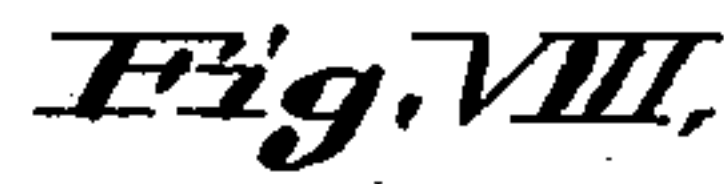
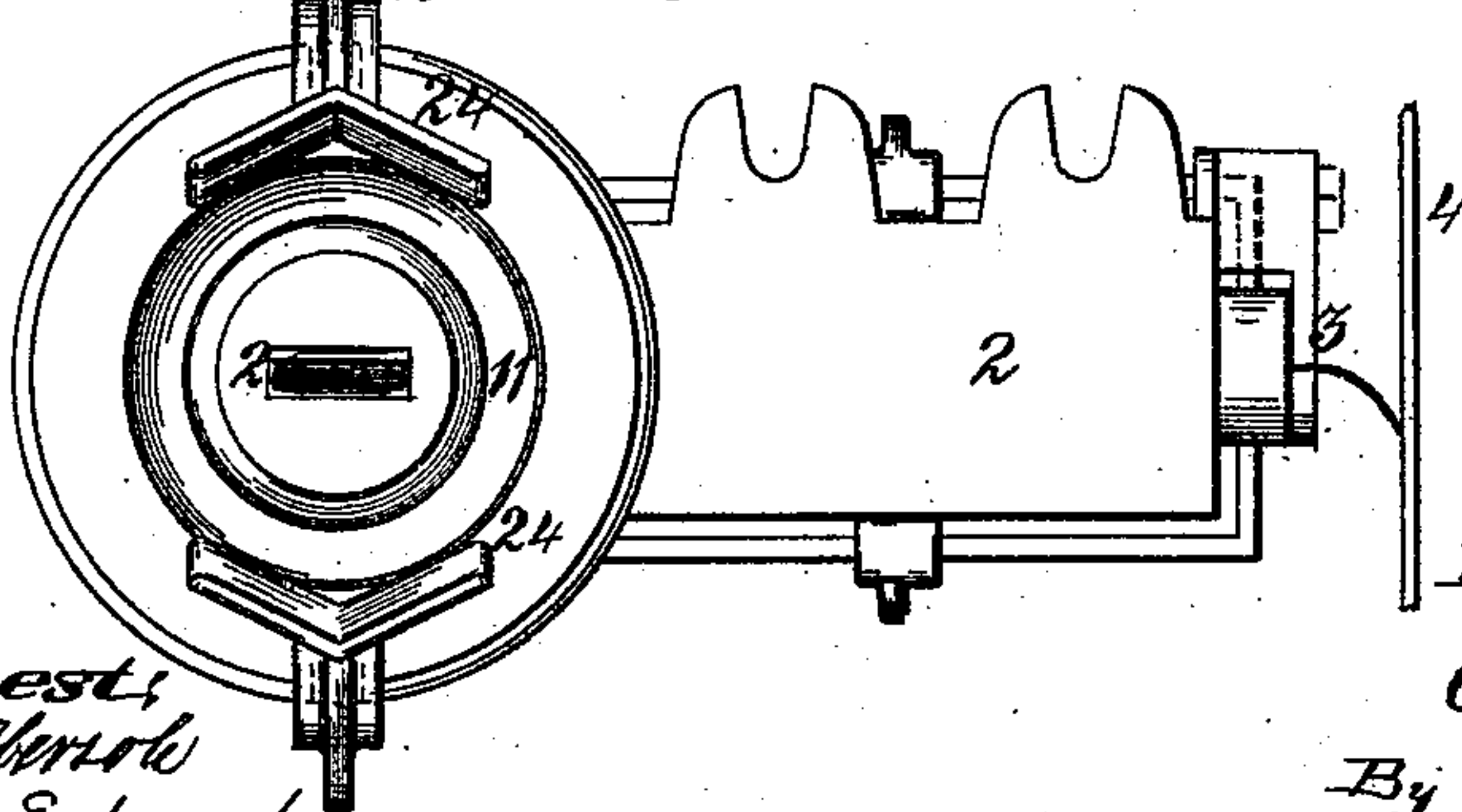
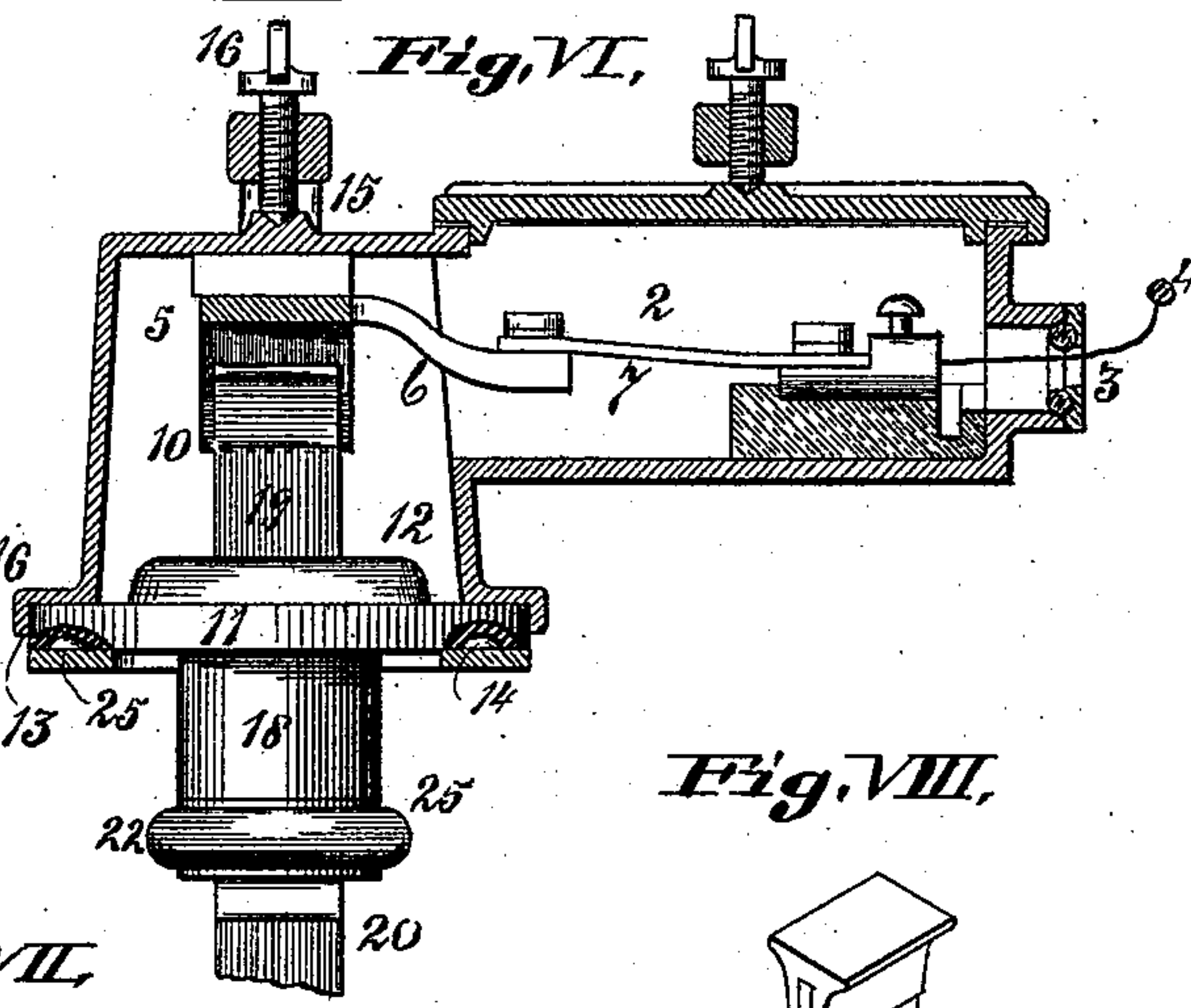
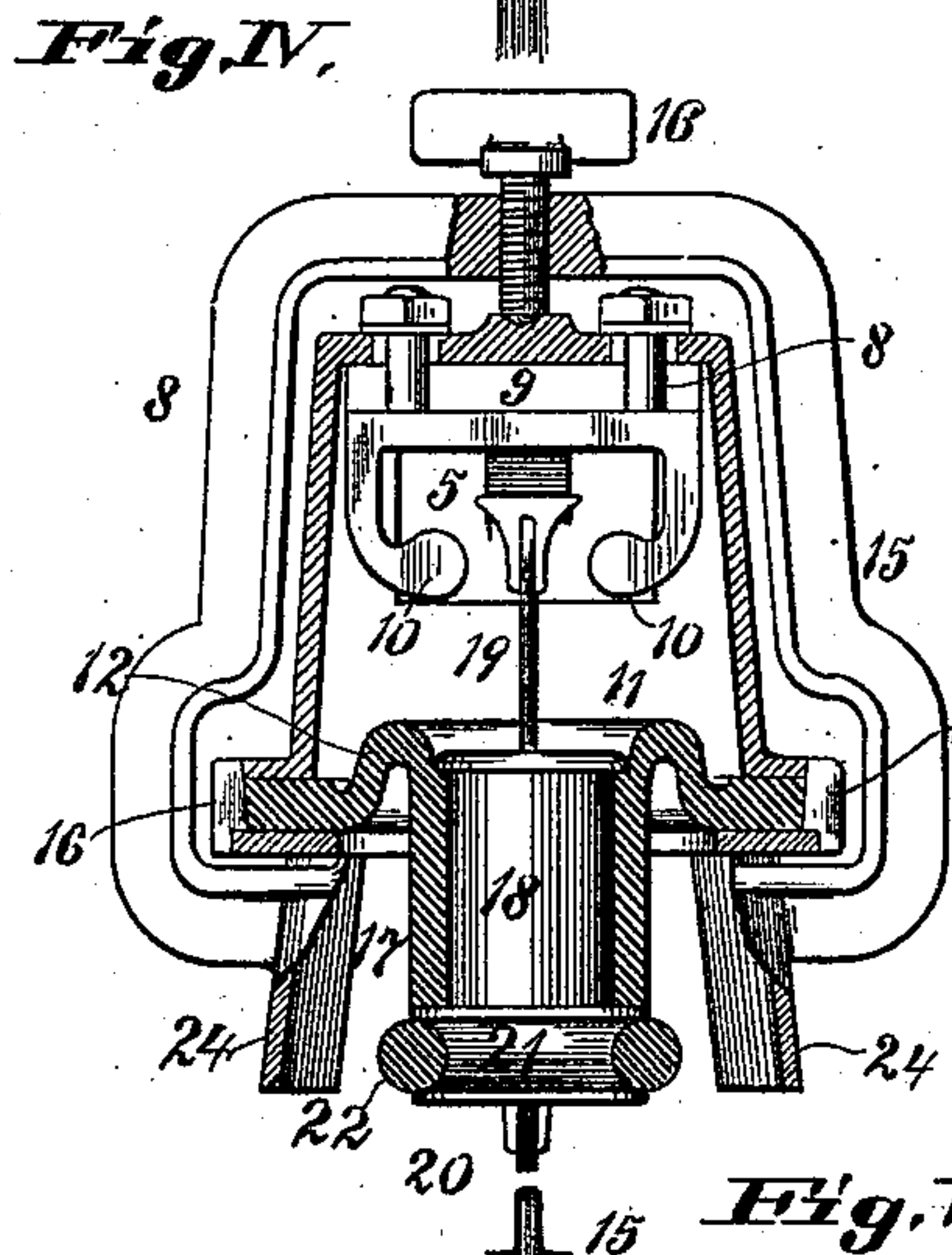
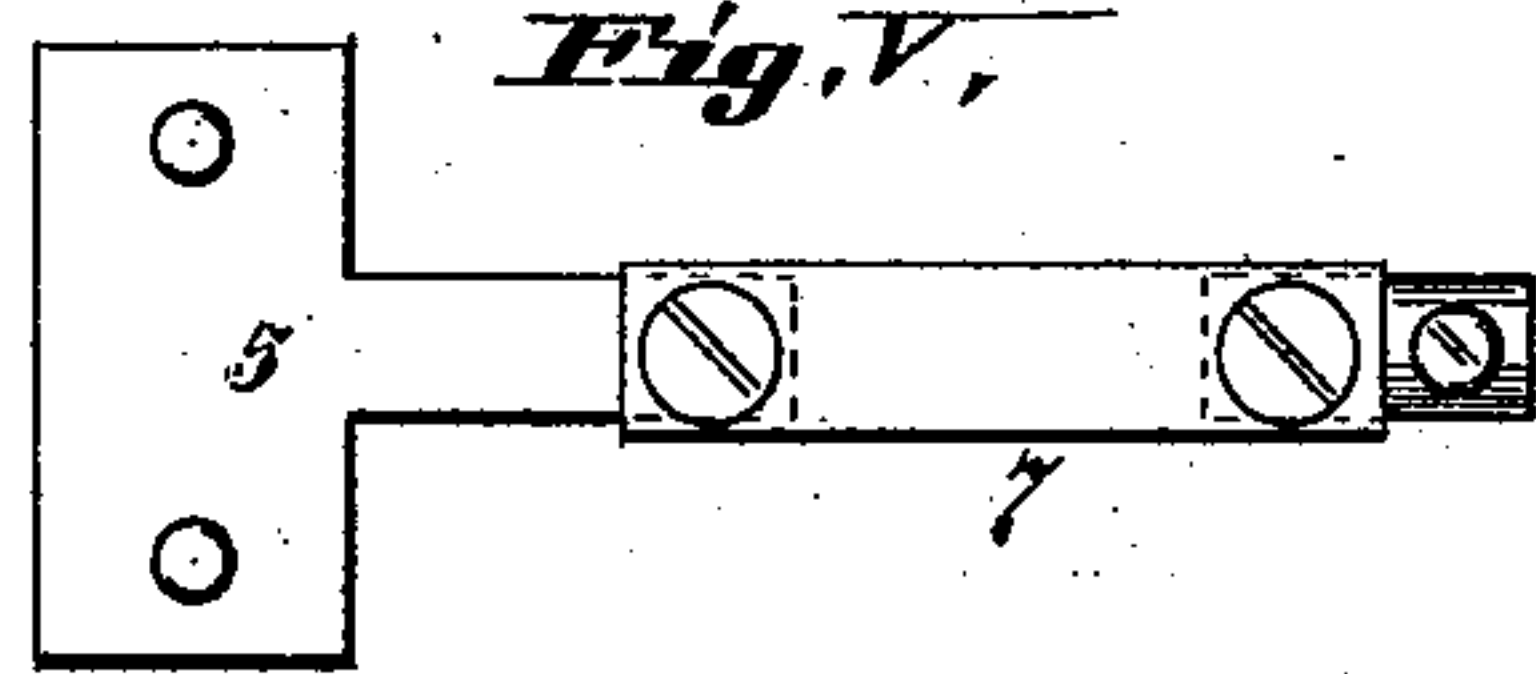
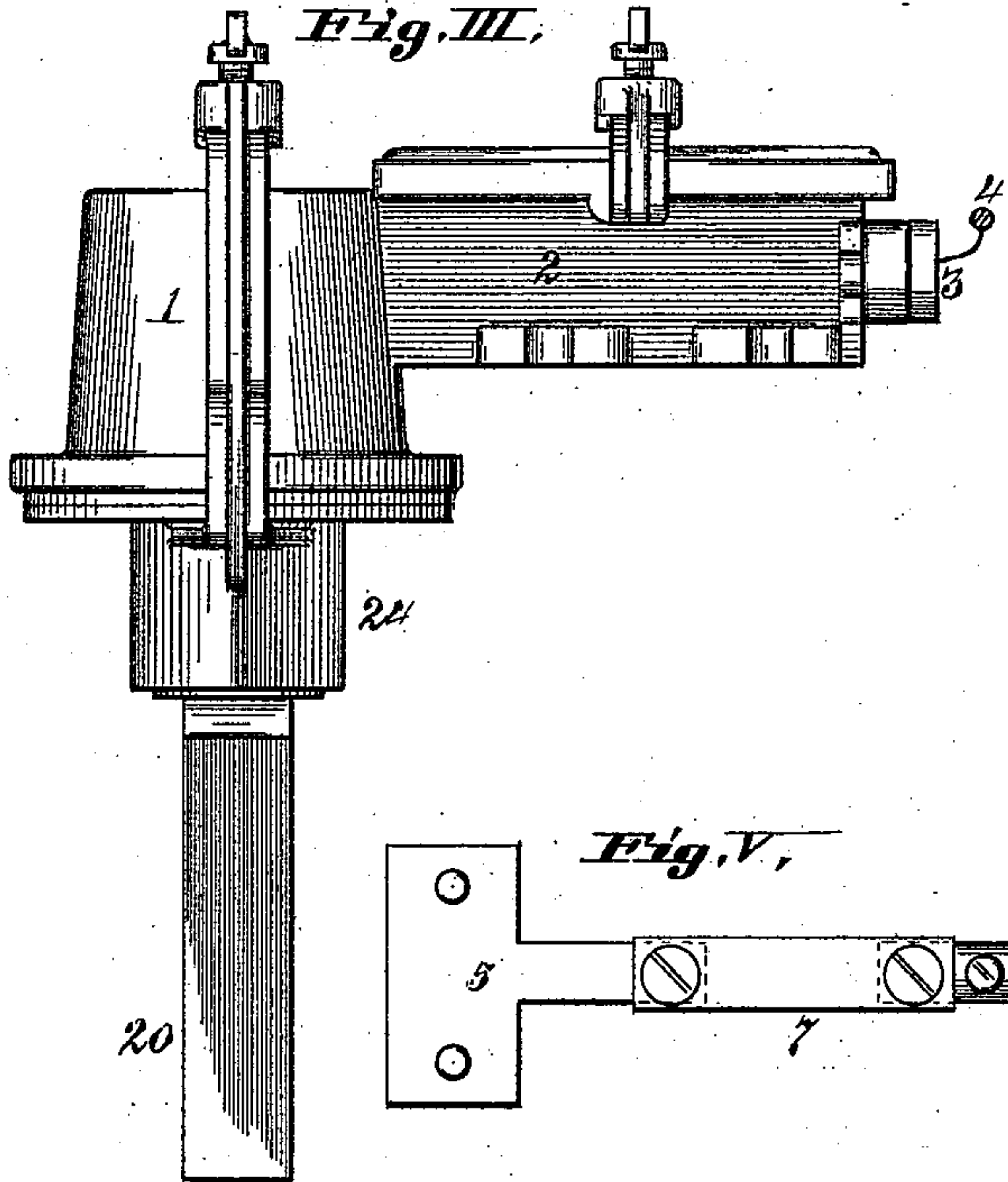
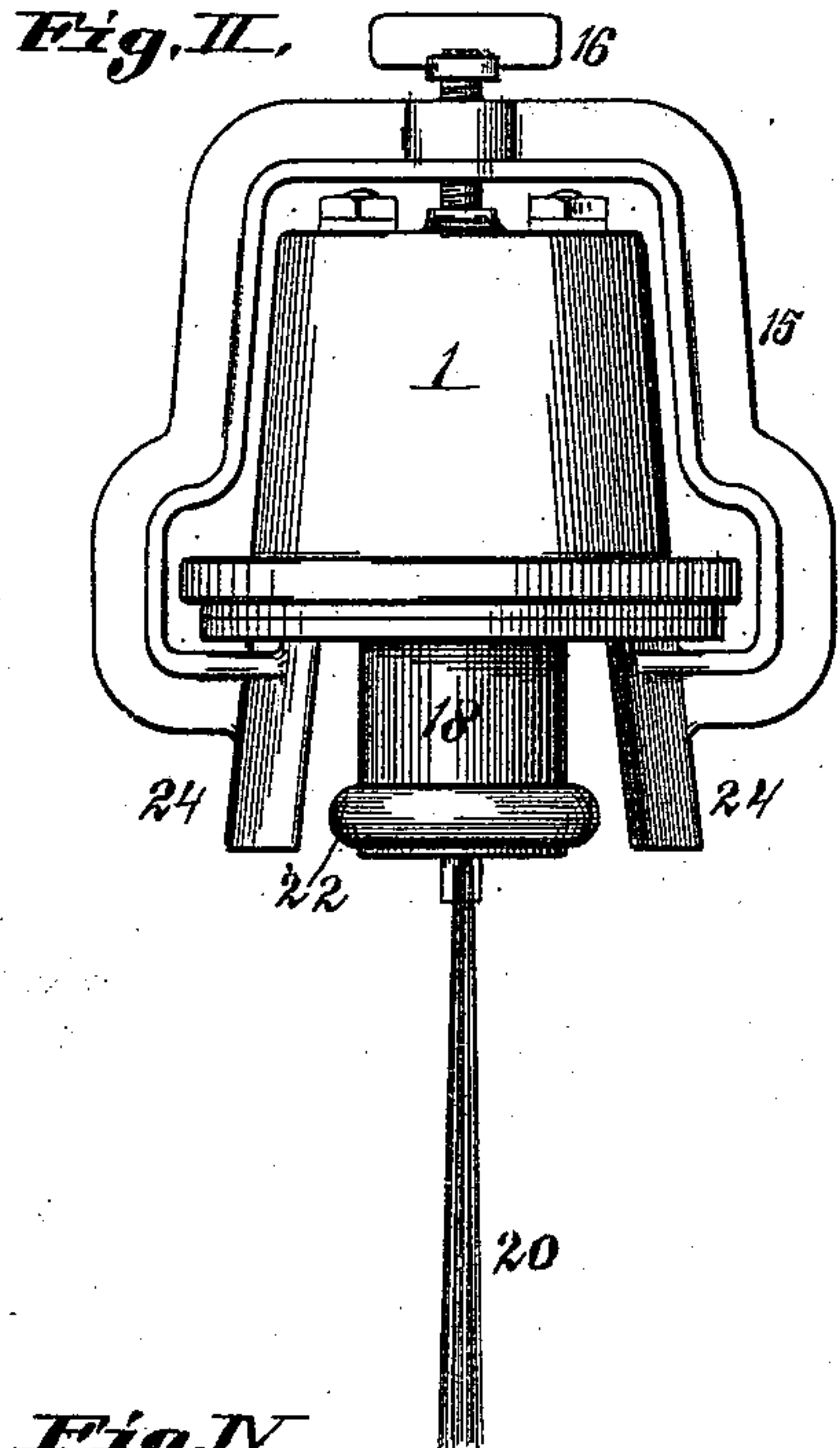
(No Model.)

2 Sheets—Sheet 2.

C. H. HARKINS.
SUPPLY SYSTEM FOR ELECTRIC RAILWAYS.

No. 528,477.

Patented Oct. 30, 1894.



Attest:
A. W. Edwards
C. H. Edwards.

Inventor:
Chas. H. Harkins.
By *Wright Bros* Attys.

UNITED STATES PATENT OFFICE.

CHARLES H. HARKINS, OF ST. LOUIS, MISSOURI.

SUPPLY SYSTEM FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 528,477, dated October 30, 1894.

Application filed December 9, 1893. Serial No. 493,216. (No model.)

To all whom it may concern:

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

10 My present invention relates to certain improvements in a switch system of electric railways; and my present invention consists in features of novelty hereinafter fully described and pointed out in the claims.

15 Figure I is a diagram in elevation, showing part of a conduit of an electric railway, two of the switches, to which my invention relates, and part of a car, with a contact plate located in the conduit. Fig. II is a front elevation of one of the switches. Fig. III is a side elevation of one of the switches. Fig. IV is a vertical section of one of the switches taken cross-wise of the fuse box. Fig. V is a top view of the fuse and the plate to which it is connected. Fig. VI is a view similar to Fig. IV, but taken lengthwise of the fuse box. Fig. VII is a bottom view. Fig. VIII is a detail, perspective view of the contact point.

20 My invention relates to that class of electric railways, in which there are a series of switches arranged along the track that are adapted to be operated by a contact plate secured to and carried by the car, to close the circuit between the main conductor and the car motor, at the time the car is passing, and to break the circuit as soon as the car has passed. Several methods of accomplishing this have been suggested, among which is the method of pivoting the switch box or housing so that it will be swung by the car to close the circuit, and swing back again, after the car has passed, to break the circuit. A serious objection to this method is that the journals upon which the switches swing are liable to become rusty and stick, or not work easily and smoothly, and these journals become worn and loose, admitting air to the box, and destroying the effect of a series of hermetically sealed switches.

50 The object of my invention is to construct such a switch which will be simple and effective,

and in which there will be no movement of journals to become rusty or leaky.

Referring to the drawings, 1 represents a housing, formed preferably in one part, with a fuse box 2 into which the branch wires 3 of the main conductor 4 extend, as shown in the drawings.

The fuse box may be of any ordinary construction, and is hermetically sealed to exclude damp air and water the cover being secured to the box by means of a clamp which consists of a bridge having down-turned ends with inwardly projecting extremities which engage beneath the flange on the top of the box. The bridge has a central screw which jams against the lid and holds the cover down on the box. The main conductor 4 and branches 3, are of course insulated.

5 is a metallic plate having an arm 6, with which the fuse 7 connects. This plate may be connected to the top of the housing 1, by means of bolts 8, see Fig. IV, with a block 9 of insulation between the plate and the top of the housing. The plate has arms or contact points 10, which preferably curve inwardly, as shown in Fig. IV. The bottom portion or part 11 of the housing is made of flexible material, such as rubber, and is preferably formed with a crimp 12, to permit it to move freely, in a lateral direction. The part 11 may be secured in place by any suitable means. I have shown the body of the housing with an annular flange 13, which receives the part 11, as shown in Fig. VI, and beneath the part 11, is a flat ring 14, held in place by a suitable clamp 15, which fits over the housing, with a set screw 16 by which it may be tightened to clamp the part 11 firmly between the flat ring 14, and the body of the housing. I have shown the ring 14 with lugs 16, which fit in notches in the flange 13.

The part 11 has a hollow neck 17, in which fits a metallic block or spool 18, having an upwardly extending contact arm 19, and a downwardly extending brush or contact point 20. The lower end of the block 18 is formed with a circumferential groove 21, to receive a ring 22, of insulation.

In the operation of the device, a plate 23, see Fig. I, (which is suitably suspended from the car,) comes in contact with the brushes

20, and swings the contact arms 19 laterally into engagement or against one of the contact points 10, the flexible part 11 permitting this movement, the block or spool 18 of the bottom being moved to the position shown in Fig. I, with the ring 22 into engagement with a projection 24 on the clamp 15, which limits the movement of the parts. As soon as the car passes, the bottom 11 assumes its normal condition, shown in Fig. IV, with the contact arm 19 out of engagement with either point 10, and thus the electric circuit is broken.

The switches are located near enough together for one brush 20 to always be in contact with the plate 23, that is to say, the plate reaches one brush before leaving another. The current is conveyed from the brushes through the plate 23, and into the motor of the car, with which the plate 23 has insulated electrical connection.

The flat ring 14 is provided with bosses 25 which fit in depressions in the part 11, so as to prevent the part 11 from turning and getting out of position.

The device is simple and durable, and there is no possibility of its failing to operate, or of its wearing and becoming exposed to moisture.

I have shown two of the contact points 10, but it is evident that with a car moving in one direction only, but one of these points may be used.

I am aware that it is old to locate switches at intervals along a track, each composed of a housing having a contact point which is in electric connection with a main conductor, and each housing having a flexible steel portion carrying a contact point adapted to be moved in and out to meet the conductor contact point, but my invention is to be distinguished from such a construction in that the arrangement of the parts and the nature of the flexible portion of the housing are such that the contact arm or point carried by the flexible portion of the housing has a vibrating, swinging motion laterally to the main conductor contact point which makes a much more practical arrangement.

I claim as my invention—

1. In an electric railway, independent switches located at intervals along the track

and each comprising a housing having a contact point which is in electric connection with a main conductor, and each housing having a flexible portion adapted to yield laterally with relation to said contact point, an arm secured to and carried by the flexible portion of the housing, and a brush secured to the flexible portion of the housing and adapted to be engaged by a plate on the moving car, whereby there is imparted to said arm a laterally swinging vibration to bring it into engagement with said contact point; substantially as and for the purpose set forth.

2. In an electric railway, independent switches located at intervals along the track and each comprising a housing having a flexible portion, a contact point located within the housing and which is in electrical connection with a main conductor, an arm secured to and carried by said flexible portion of the housing and extending into the path of said contact point so as to swing to and from said contact point and to stand out of contact with said point when the switch is at rest, and a flexible brush secured to and carried by said flexible portion of the housing and adapted to be engaged by a plate on the moving car to swing said arm and bring it into contact with said point, as set forth.

3. In an electric railway, independent switches located at intervals along the track and each comprising a housing having a flexible portion, a pair of contact points located within the housing, and which are in electrical connection with a main conductor, an arm secured to and carried by said flexible portion of the housing and projecting between said contact points so as to vibrate to one or the other and to stand out of contact with either of said points when the switch is at rest, and a brush secured to and carried by said flexible portion of the housing and adapted to be engaged by a plate on the moving car to vibrate said arm and bring it into contact with either one of said points according to the direction in which the car may be moving; as set forth.

CHARLES H. HARKINS.

In presence of—

A. M. EBERSOLE,
C. G. EDWARDS.