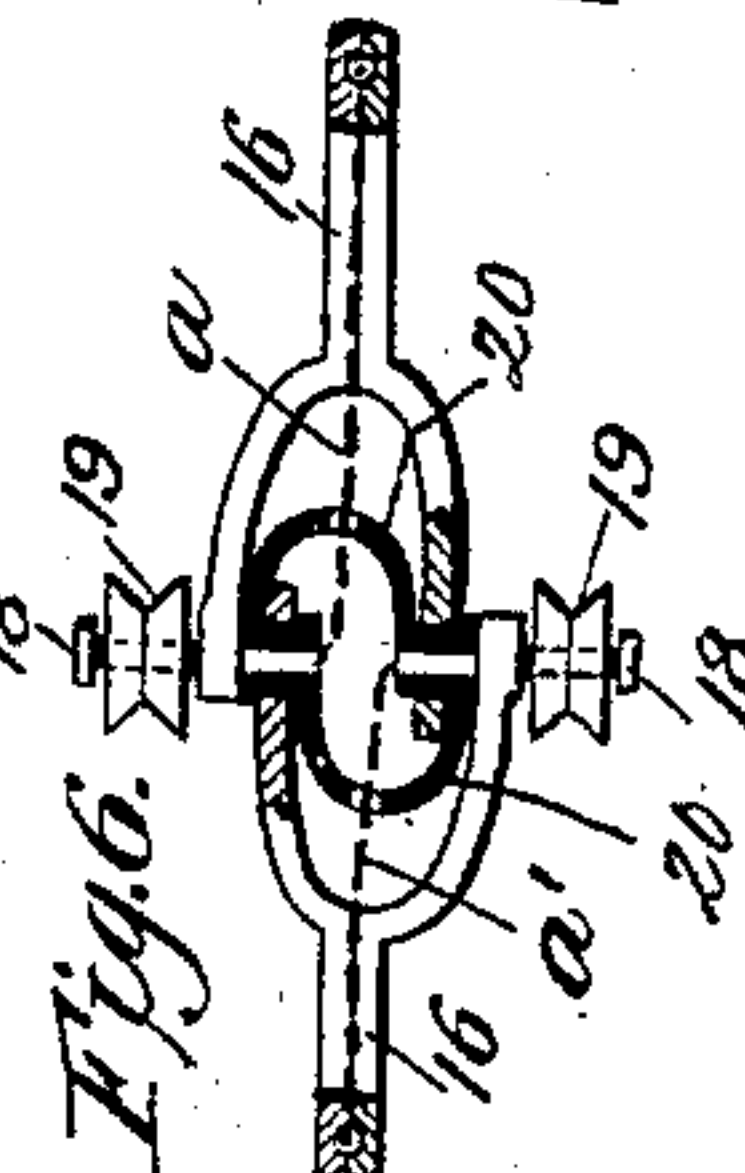
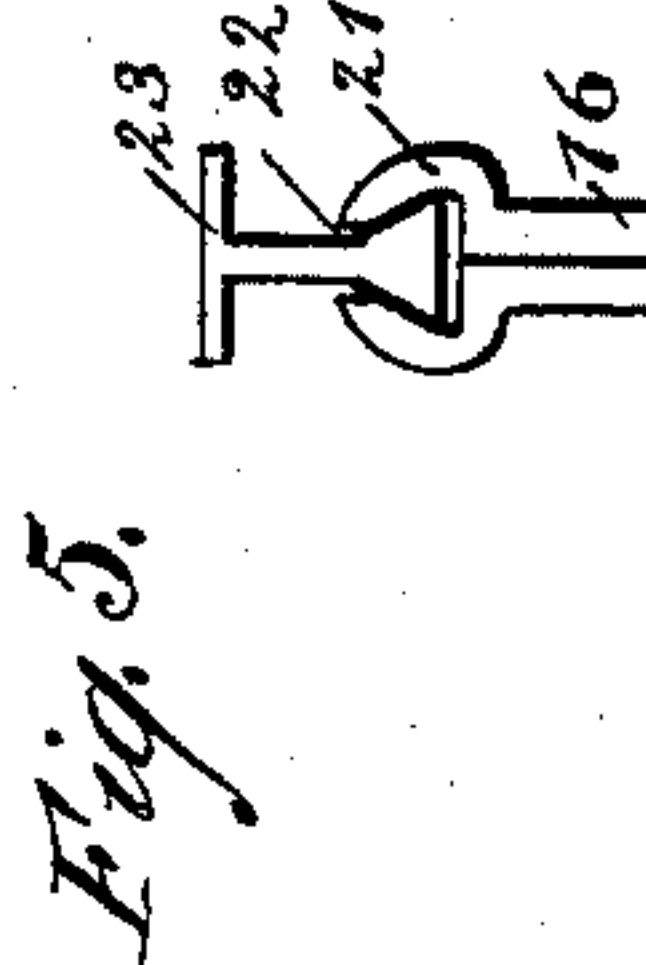
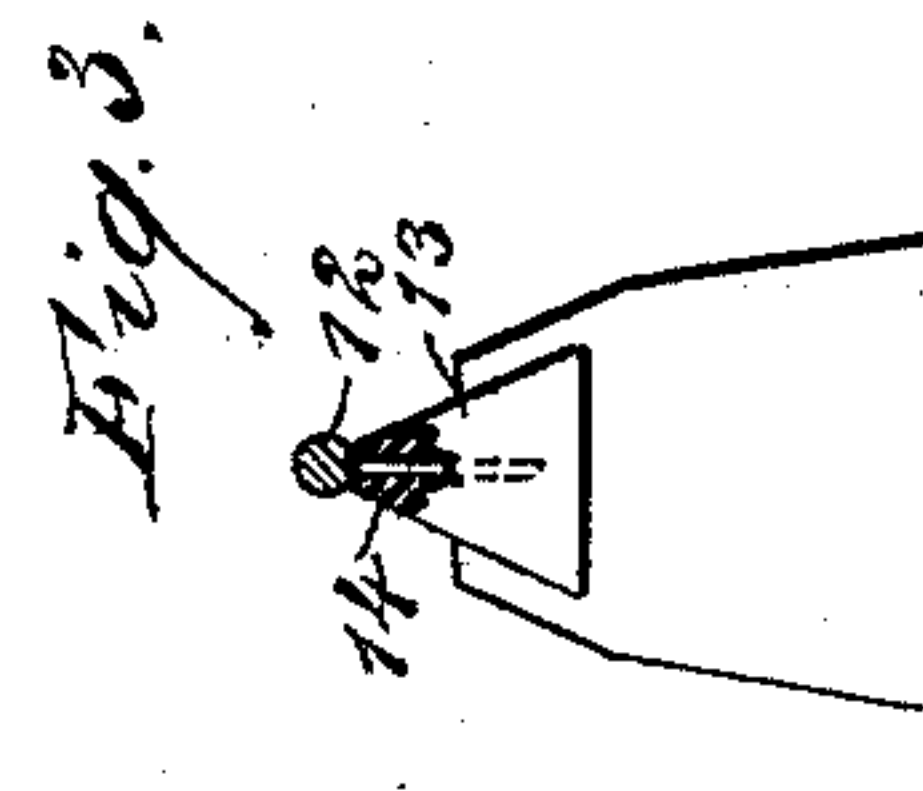
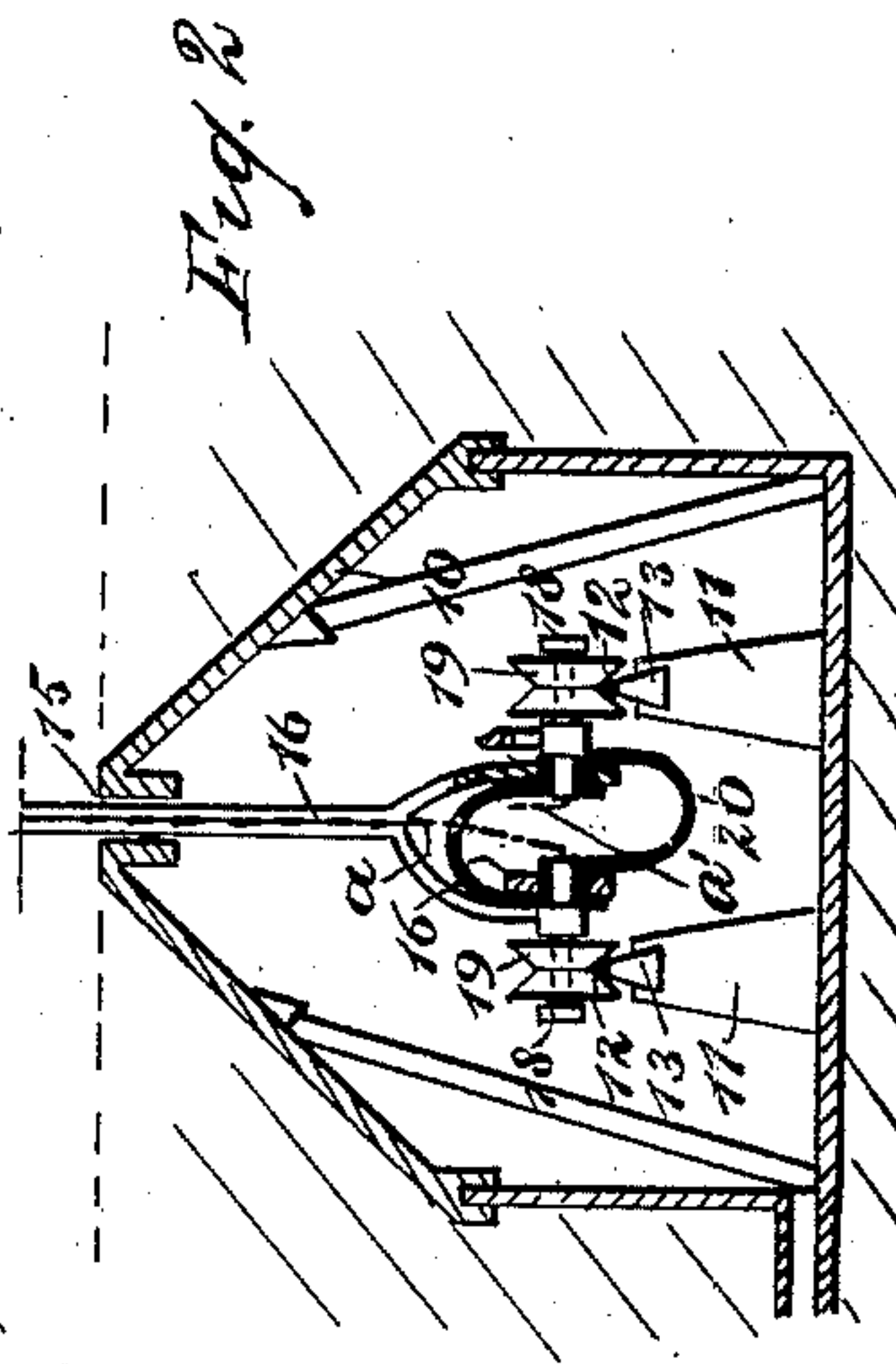
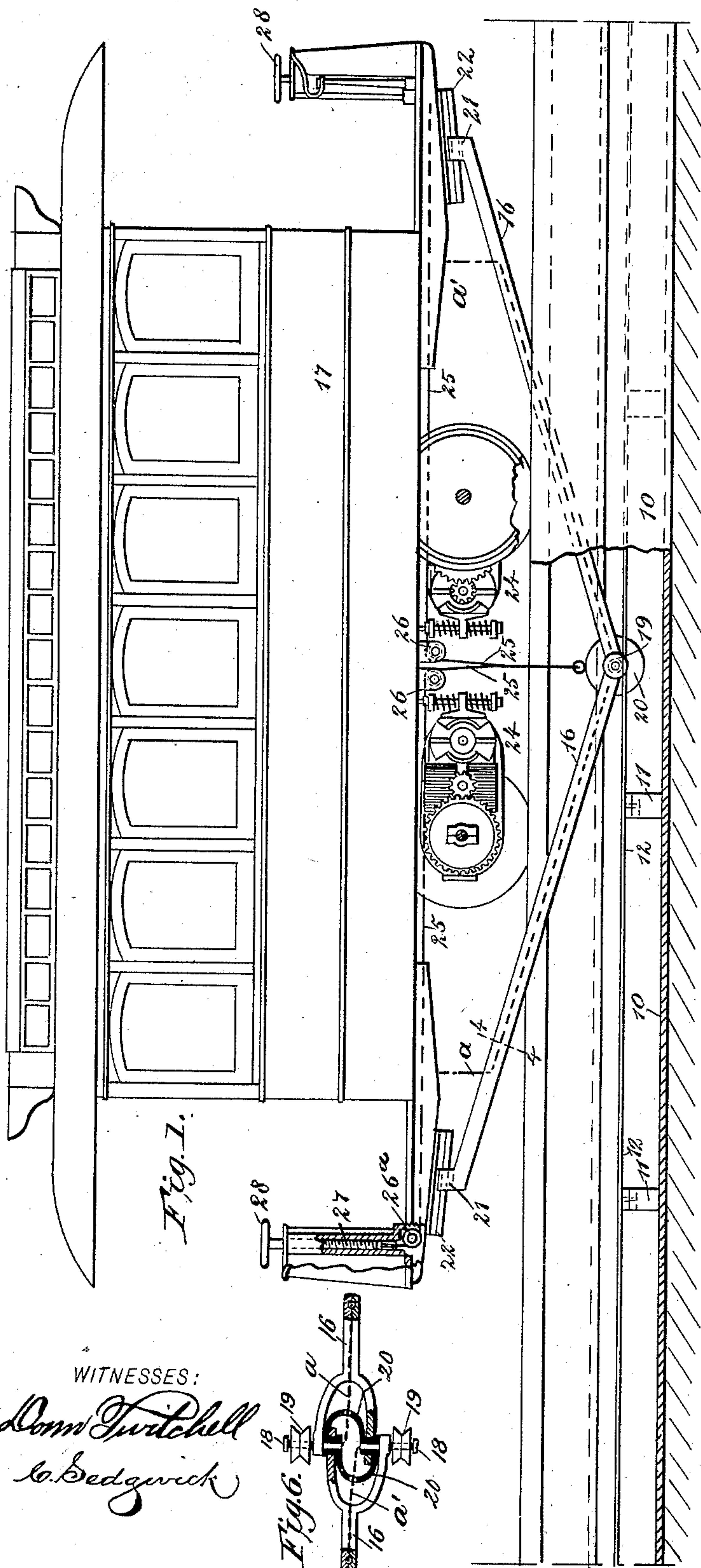


(No Model.)

J. J. COSGROVE, Jr.
CONDUIT TROLLEY.

No. 474,218.

Patented May 3, 1892.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JAMES J. COSGROVE, JR., OF PHILADELPHIA, PENNSYLVANIA.

CONDUIT-TROLLEY.

SPECIFICATION forming part of Letters Patent No. 474,218, dated May 3, 1892.

Application filed June 3, 1891. Serial No. 394,936. (No model.)

To all whom it may concern:

Be it known that I, JAMES J. COSGROVE, JR., of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and Improved Electric Railway, of which the following is a full, clear, and exact description.

My invention relates to improvements in electric railways, and more especially to improvements in a trolley mechanism for an underground system; and its object is to produce a simple form of trolley which is adapted to be used with a continuous metallic circuit and which may be easily adjusted vertically, so that it may pass any obstruction.

To this end my invention consists in certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a broken side elevation, partly in section, of a car provided with my improved trolley and showing the trolley in connection with the line-wire. Fig. 2 is a cross-section through the conduit. Fig. 3 is an enlarged detail view, partly in section, of one of the line-wire supports. Fig. 4 is a cross-section through a trolley-arm on the line 4 4 of Fig. 1. Fig. 5 is a detail end view of one of the slides which supports the trolley-arm; and Fig. 6 is a detail view of the lower ends of the trolley-arms, partly in section.

The conduit 10 is laid beneath the surface of the ground and between the rails of a track, it being suitably braced and of any approved form, and mounted on the bottom of the conduit are parallel lines of supports 11, which carry the continuous wire 12, the wire being held upon the support by insulators 13, and the wire is secured to the insulators by means of a smaller copper wire 14, which is secured to the main wire 12 and extends downward into an insulator, as shown in Fig. 3. The conduit has an opening 15 through the top, which opening is at the surface of the earth, and through this the trolley-arms 16 extend. These arms converge at their lower ends and their upper ends diverge and are secured to

the ends of the car 17, in the manner herein-after described. The lower ends of the trolley-arms 16 are forked, and in said forked ends axles 18 are mounted in insulated bearings. The axles 18 connect the forked ends and carry on their outer ends the trolley-pulleys 19, which run upon the main wire 12, and thus carry the current from the wire. The inner ends of the axles 18 are protected by a casing 20. The upper ends of the arms 16 terminate in heads 21, which have dovetailed recesses extending longitudinally through them, and these recesses are adapted to receive the dovetail slides 22, which are secured to the car-bottom beneath the platform by means of flanges 23 and suitable fastening-bolts. It will thus be seen that when the trolley is raised the arms may spread and will slide on the slides 22 and when the trolley is lowered the upper ends of the arms will approach each other.

The axles 18 of the trolleys are provided with wires *a* and *a'*, which extend upward through the trolley-arms 16, as shown by dotted lines in Fig. 1, and the wires carry the current to the motors 24, which are connected with the car-axles in the ordinary way. The current will thus pass from one side of the wire 12 through a pulley 19 and axle 18, the wire *a*, the motors, the wire *a'*, the opposite axle 18, and pulley 19 to the wire 12.

The case 20, which is secured to the meeting ends of the trolley-arms, is provided with cables 25, which extend upward through the opening in the conduit and over suitable guide-pulleys 26 and 26^a, and the upper ends of the cables are secured to the lower ends of the screws 27, which are held to turn in threaded cases on the car-fenders, the screws terminating at the top in hand-wheels 28, and by turning either of the screws in one direction the trolley will be raised and by turning it in the opposite direction the trolley will drop of its own weight. It will thus be seen that in case the conduit crosses a cable-conduit the main wire 12 may be carried beneath or above the cable, and at this point the motor-man on the car may raise the trolley by turning a screw 27, so that the trolley will pass easily over the cable, and it may then be dropped back to place on the other side of the same. The trolley may likewise be raised when the current is to be

entirely shut off from the motors, or when any obstruction is to be passed.

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

1. The combination, with an underground line-wire and a car carrying electric motors, of downwardly-converging arms having sliding connections with the under side of the car, a
10 trolley mounted in the converging ends of the said arms, connections between the trolley and the motors, and means for raising and lowering the trolley, substantially as described.

2. The combination, with an underground
15 line-wire and a car carrying electric motors, of downwardly-converging arms having sliding connections with the under side of the car, two trolley-pulleys mounted in the lower ends of the arms, connections between the pulleys

and the motor, and cables connected to the
20 converging ends of the arms for raising them, substantially as described.

3. The combination, with a continuous underground line-wire and a car carrying electric motors, of downwardly-converging arms
25 having their upper ends fitted to slide on ways on the under side of the car, two axles mounted in the lower ends of the arms, a trolley-pulley on each axle, a casing inclosing the inner ends of the axles, connections between the said pul-
30 leys and the motors, and cables secured to the casing for raising the said arms, substantially as herein shown and described.

JAMES J. COSGROVE, JR.

Witnesses:

JAMES MCKEOWN,

JAMES WOLFENDEN.