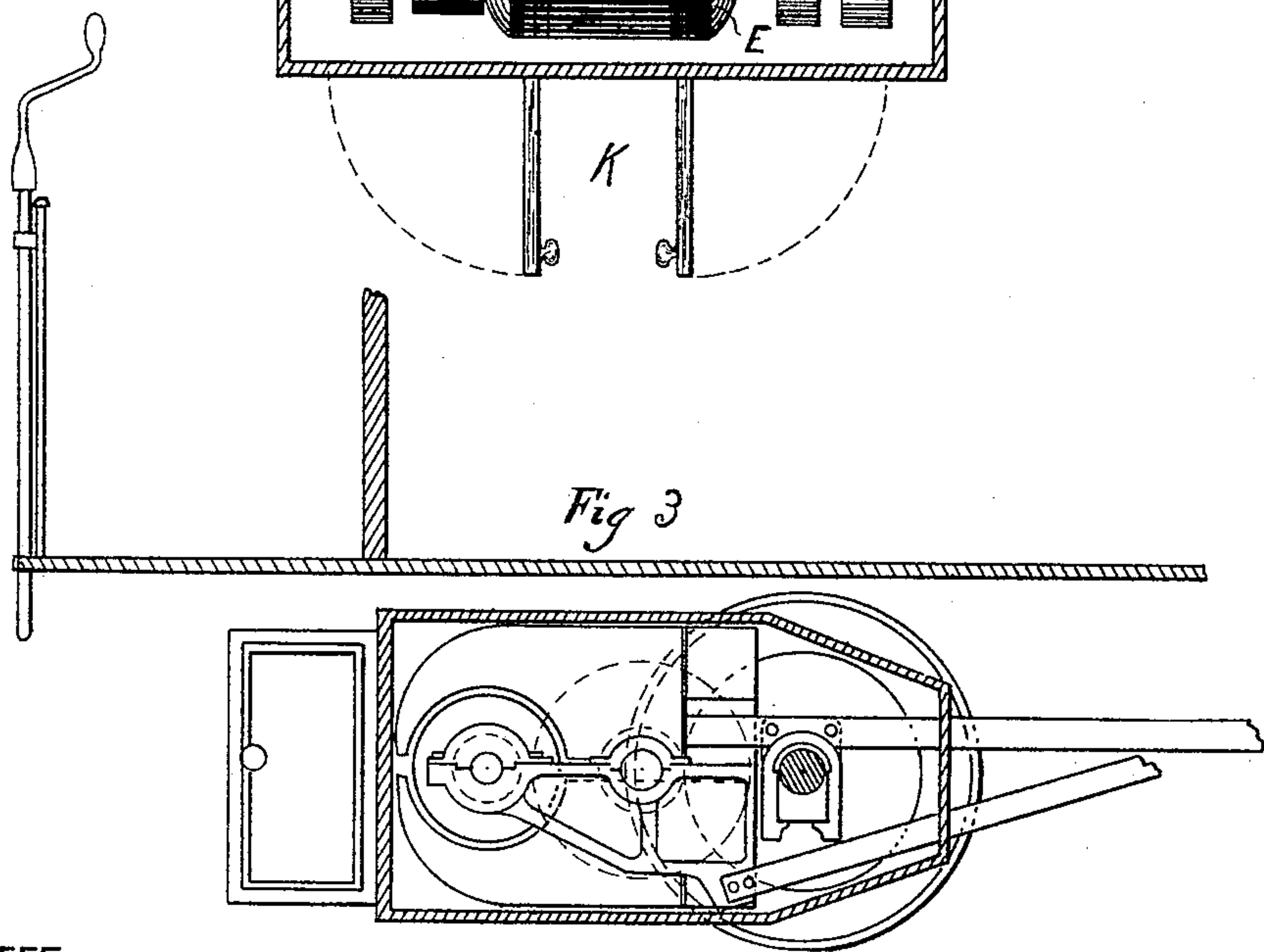
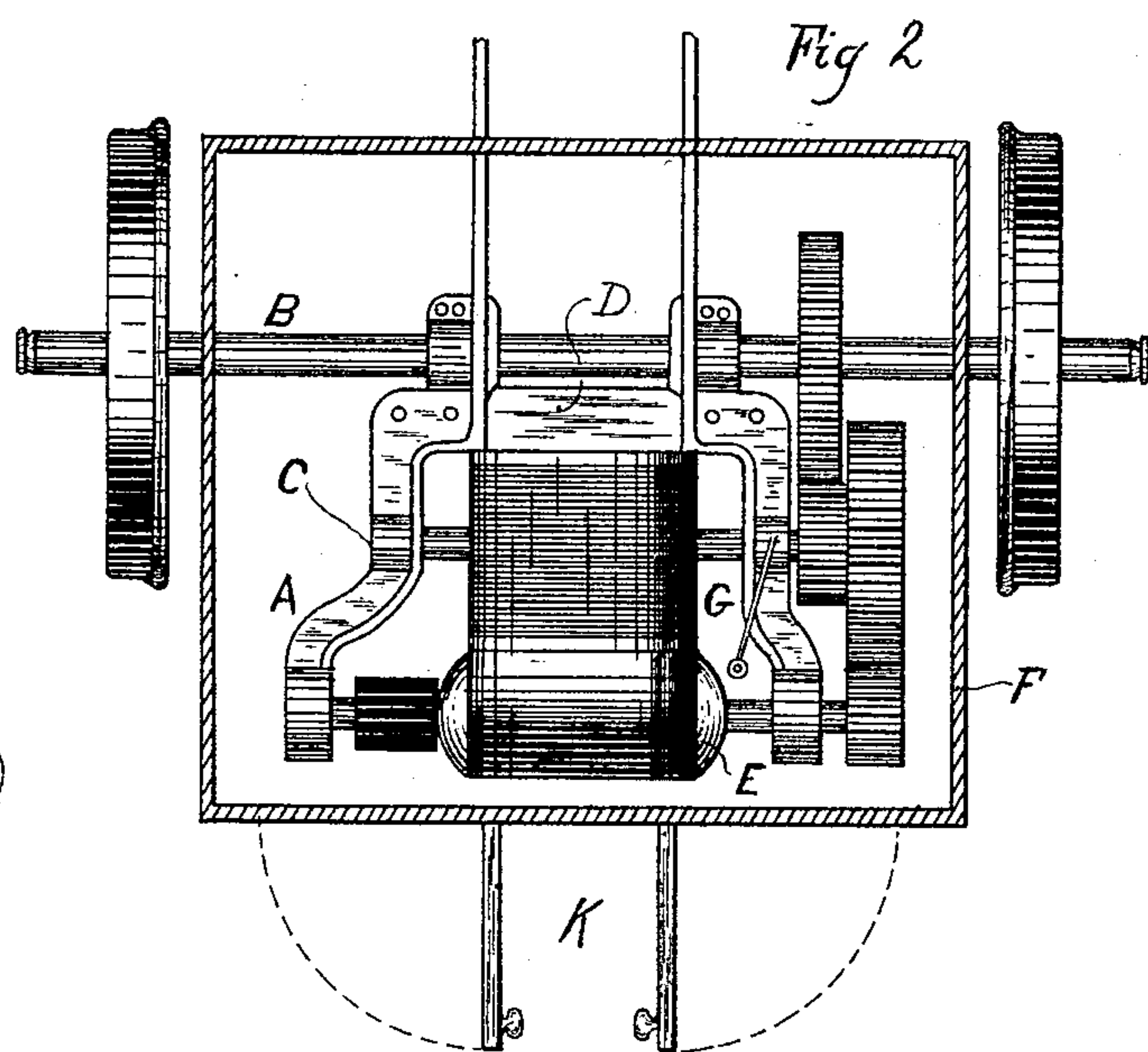
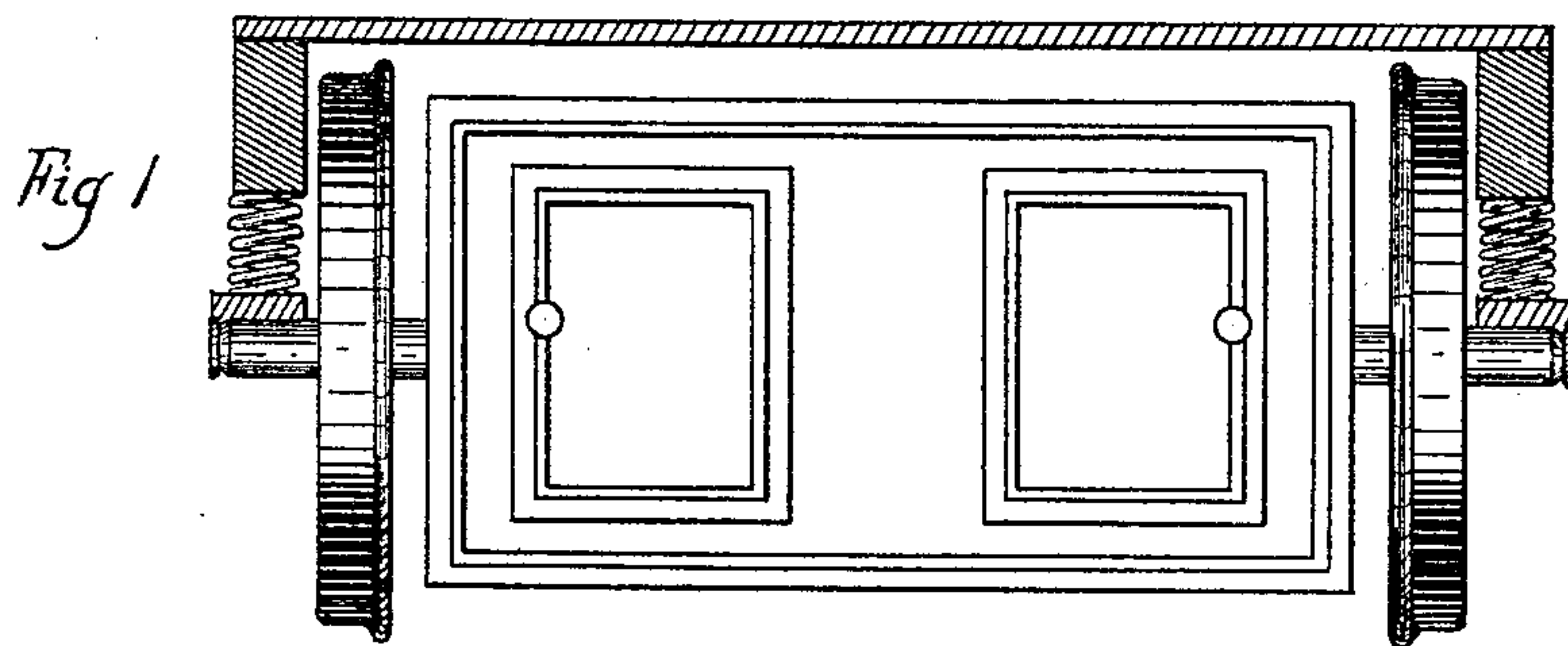


(No Model.)

W. H. KNIGHT.  
MOTOR BOX FOR ELECTRIC VEHICLES.

No. 389,230.

Patented Sept. 11, 1888.



WITNESSES,

*Edw. S. W. Quincy.*  
*Geo. A. Blackwell*

INVENTOR,

*Walter H. Knight.*  
*by Bratley & Knight.*  
*Attys.*



# UNITED STATES PATENT OFFICE.

WALTER H. KNIGHT, OF NEW YORK, N. Y.

## MOTOR-BOX FOR ELECTRIC VEHICLES.

SPECIFICATION forming part of Letters Patent No. 389,230, dated September 11, 1888.

Application filed May 10, 1888. Serial No. 273,523. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER H. KNIGHT, a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Motor-Boxes for Electric Vehicles, of which the following is a specification.

My invention relates to electrically-propelled vehicles, and especially to those designed for street-railway work, when it is desirable that the propelling-motor should be placed beneath the floor of the car.

My invention consists in placing the motor entirely beneath the car in such a manner that the armature end extends out from the axle, and providing it with a boxing which is independent of the car-body and accessible from without.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is an end elevation of the motor-boxing; Fig. 2, a plan thereof with the top of the box removed, and Fig. 3 a side elevation with the side of the box removed.

In the figures, A is the motor, geared to the axle B of the vehicle through the counter-shaft C. The form of motor employed is well known, having two field-magnets and cylindrical armature E. In connecting it with the vehicle the yoke D of the motor is placed next to the axle, while the armature is placed at the end remote from the axle. It is also placed, as is seen in Fig. 3, outside the wheel-base on the ordinary four-wheel street-car vehicle, so that the commutator goes as far away as possible from the axle and is brought out into the most accessible position. In constructions heretofore employed it has been customary to place the motor between the axles and under the floor of the car, so that it could only be reached by trap-doors opening into the interior of the car. This feature has been very objectionable, as any attention to the commutator or other parts of the machine necessitated an interference with the passengers.

In my invention the motor is situated as described, and it is then inclosed in a boxing which is independent of the car-floor, and a door or other device for rendering the machinery accessible is made in the boxing. This door opens from the outside of the vehicle, so

that no interference with the passengers is necessary in case the machinery is to be inspected.

In the drawings the box mentioned is lettered F, and, as will be seen in Figs. 1 and 2 especially, the doors K are placed in the end of the box adjacent to the commutators of the machine and to the bearings of the armature. The commutator can thus be cared for and the bearings oiled without difficulty. For inside bearings—such as those of the counter-shaft C—I bring out from the bearing a tube, G, terminating in an oil-cup by the door, so that all the bearings of the machine can be oiled from these doors.

Instead of having two individual doors K, as shown in the drawings, the whole end of the box may be made into a single door or flap, or any other suitable means provided for giving ready access to the motor from outside the car-body.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an electrically-propelled vehicle, the combination, with a car-body and a propelling-motor beneath it outside the wheel-base and geared to the axle, of a boxing therefor independent of the car-body, and provided with a door or other opening accessible from without the vehicle.

2. In an electrically-propelled vehicle, the combination, with a car-body, of a propelling-motor beneath it geared to the wheels with its yoke or neutral point adjacent to the axle, and a boxing for said motor provided with a door or other opening at the armature end accessible from without the vehicle.

3. In an electrically-propelled vehicle, the combination, with a propelling-motor outside the wheel-base and geared to the axle, of a boxing therefor and a door or other opening in said boxing adjacent to the commutator of the motor.

4. In an electrically-propelled vehicle, the combination, with a boxing therefor accessible from outside the vehicle, of an oil-tube leading from the counter-shaft bearing to a point near the door or opening by which access is had to the motor.

5. In an electrically-propelled vehicle, the combination, with an electric motor outside the wheel-base geared to the axle and having

its commutator at the remote end from the axle, of a boxing therefor, having a door or other opening in the end adjacent to the commutator.

- 5 6. In an electrically-propelled vehicle, the combination of motor A beneath the vehicle and a boxing, F, therefor, provided with a door or opening, K, the motor having its armature E on the end of the motor opposite the  
10 said door.

7. In an electrically-propelled vehicle, the combination of motor A, boxing F, and a door, K, opposite both armature-bearings of the motor.

WALTER H. KNIGHT.

Witnesses:

JOHN P. S. CHURCHILL,  
GEO. I. BLACKWELL.