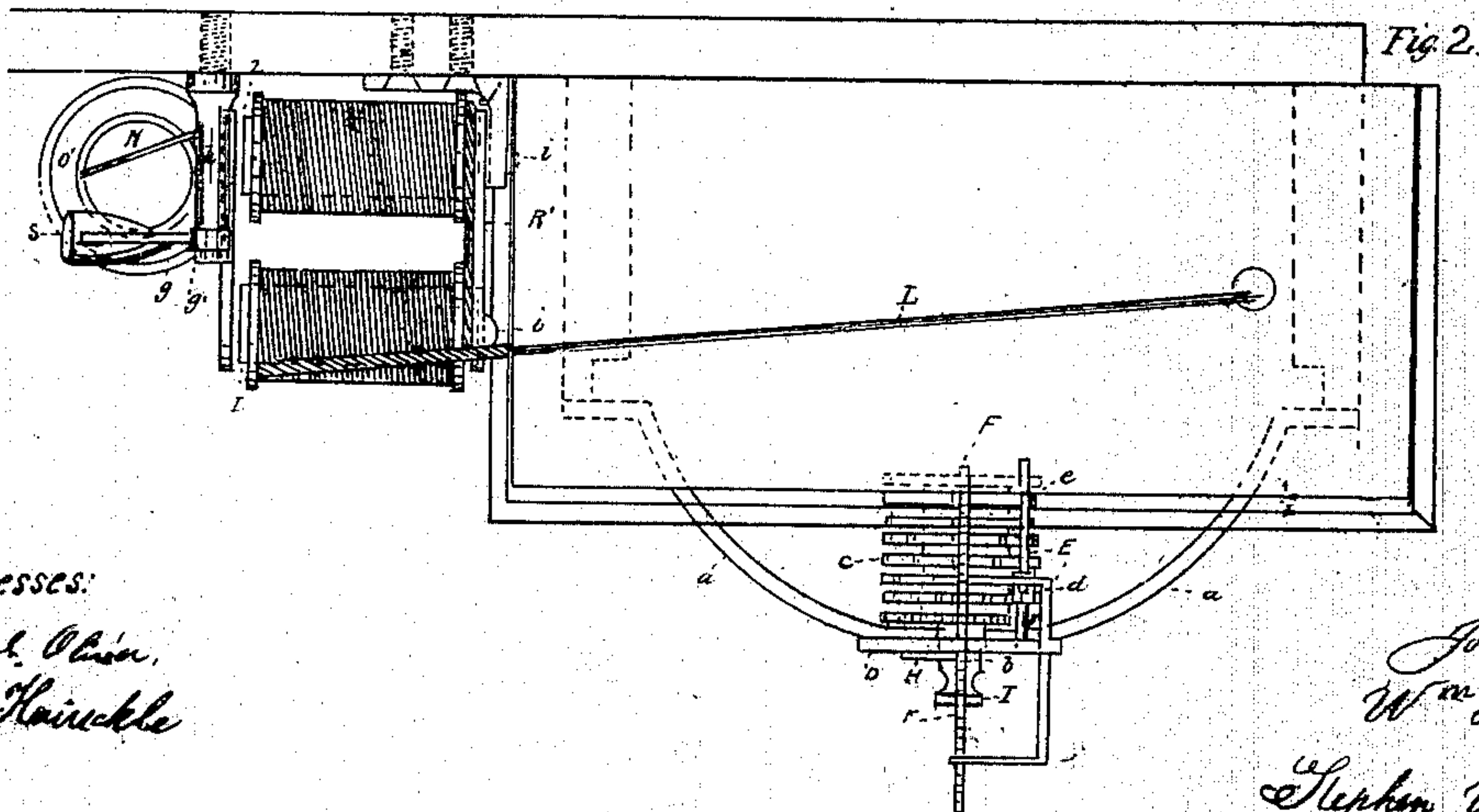
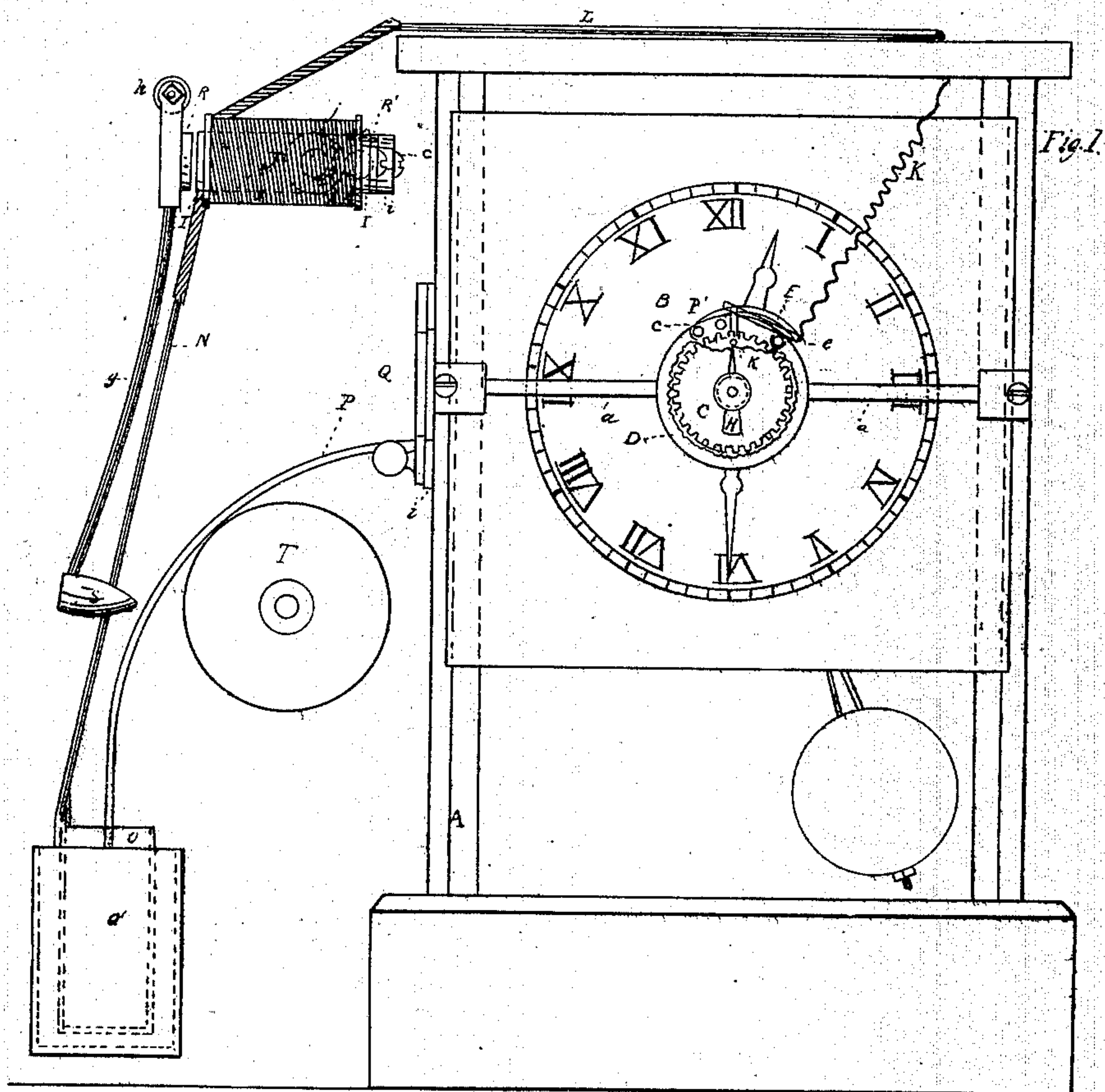


J. & W. H. Clark.

Electrical Car Starter.

N^o 71458

Patented Nov. 26, 1867.



Witnesses:
 J. H. Olson,
 C. H. Haischke

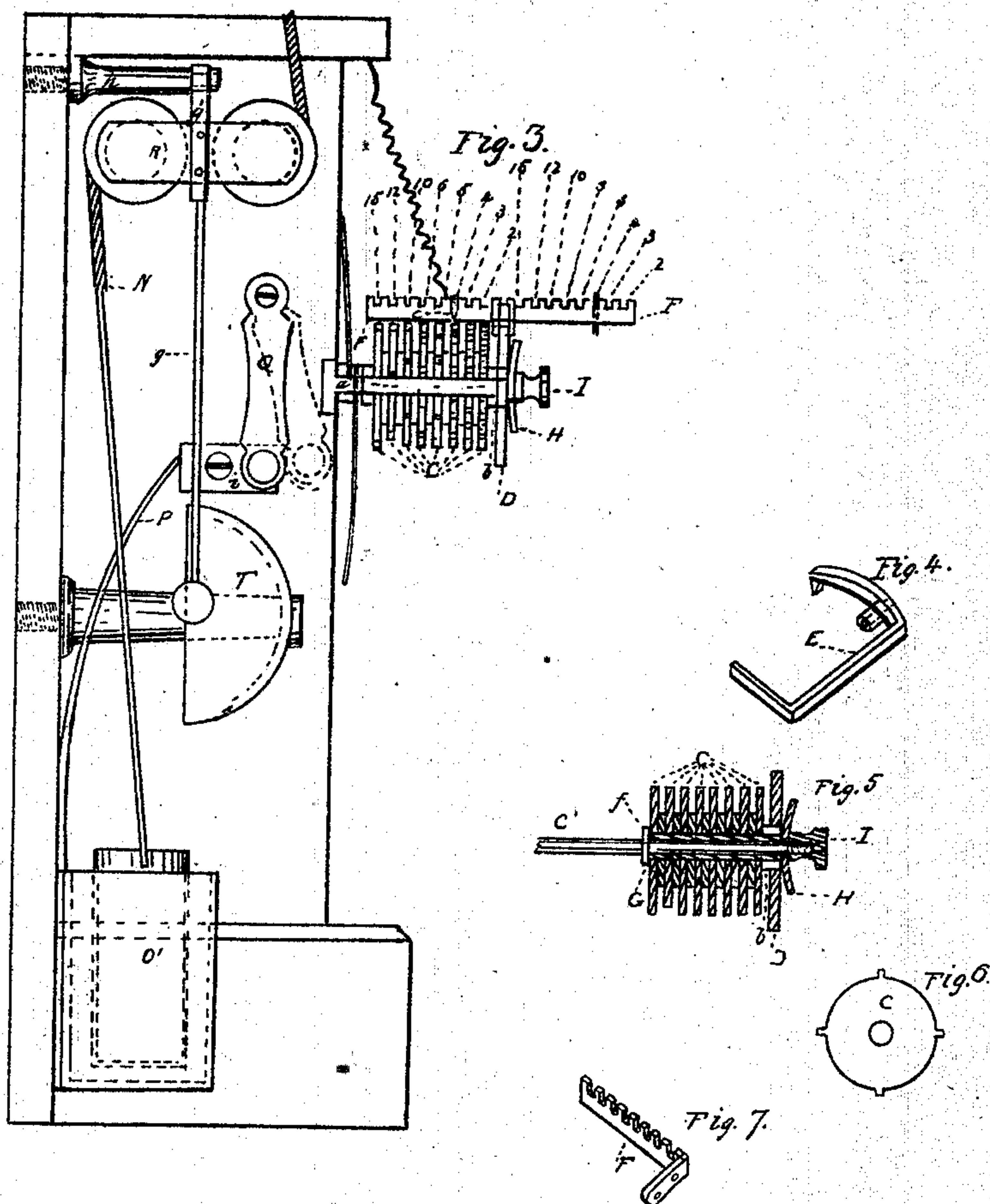
Inventor:
 Jos. Clark
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Witnesses:

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United States Patent Office.

JOSEPH CLARK AND WILLIAM H. CLARK, OF PHILADELPHIA PENNSYLVANIA.

Letters Patent No. 71,458, dated November 26, 1867.

IMPROVEMENT IN ELECTRICAL CAR-STARTERS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, JOSEPH CLARK and WILLIAM H. CLARK, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Electrical Car-Starters; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of our invention consists in a novel mode of connecting electrical batteries with the ordinary movement of clocks by means of circuit-wheels, arranged in connection with the minute and hour-shafts, and other intermediate devices in connection therewith, for closing and breaking the current, to give alarms for starting cars and other purposes, at stated intervals of time, the whole being constructed, arranged, and operating substantially as hereinafter described. In the accompanying drawings, which make a part of this specification—

Figure 1 is a front view of an ordinary clock, with the electrical apparatus in combination therewith for giving the alarm.

Figure 2 is a plan of the same.

Figure 3, Sheet No. 2, is a side elevation.

Figure 4 is an isometrical view of the sliding changer E.

Figure 5 is a longitudinal section through the circuit-wheels C, minute-shaft C', tube G, bushing b, hand H, and nut I.

Figure 6 is a face view of one of the circuit-wheels C.

Figure 7 is an isometrical view of the rack F'.

A is the box or case which contains the ordinary clock-movements. B is the dial, in front of which are the circuit-wheels C. Eight of said wheels are represented in the drawings, but we do not confine ourselves to any particular number, as the number will be varied by the number of the various portions of starting-time required. These wheels are in connection with the projecting end of the shaft C' of the minute-hand, which is supported in front by means of the vertical disk D, which has bent arms, *a a*, secured at their outer ends, by means of screws, to the box A. There is a hard-rubber bushing, *b*, which insulates the minute-shaft from the disk. The circuit-wheels C, which may be of any convenient number, have each a different number of teeth from the others, so as to adapt the apparatus for giving alarms at any required portions of time. In the drawings, the front wheel has thirty teeth, and consequently gives an alarm every two minutes; the next one has twenty teeth, and gives an alarm every three minutes; the others have respectively fifteen, twelve, ten, six, five, and four teeth, and give alarms every four, five, six, ten, twelve, and fifteen minutes respectively; and so on, the teeth may be increased to any desired number, and the number of teeth so varied as to give any requisite portions of time. When the alarms are to be given for such portions of time that are not aliquot parts of sixty, the number of minutes in an hour, as seven for instance, which leaves a remainder, the wheel or wheels have to be connected with the hour-hand shaft; and when the alarms are to be more than an hour apart, the wheel or wheels have also to be connected with the hour-hand shaft. E is a sliding changer, that has at the extreme end of the arm 1 a platinum point, *c*, which is caused to come into contact with the teeth of the circuit-wheels C, as the latter revolve. This arm has a hub, *d*, which turns and slides freely on the stud *e*, which projects inwards from the disk D, for the purpose of changing the platinum point *c* from one circuit-wheel to another. The extreme end of the arm 2 of the slide rests respectively in the notches or serrations of the rack F, which projects outwards from the disk D. The notches in the rack F' are perpendicular with the circuit-wheels respectively, and those of the rack F coincide therewith, and are numbered according to the various portions of time each wheel indicates when in connection with the platinum point *c*, so that by changing the arm 2 of the sliding changer E to the notch in the rack F that is marked with the required portion of time, the arm 1 is brought into the notch in the rack F' immediately over the circuit-wheel, which gives the alarm at the ends of such portions of time. For instance, when the arm 1 of the sliding changer is in the front notch of the rack F, the arm 2 is in the corresponding notch in the rack F', and the platinum point *c* is brought into connection with the wheel that has thirty teeth, and gives an alarm every two minutes; but if we want to start every three minutes, we

change the arm 1 into the second notch, which is numbered three, and this brings the platinum point into connection with the wheel that has twenty teeth, and which gives an alarm every three minutes, and so on. The circuit-wheels C are permanently attached to the tube G, which fits on the minute-shaft, and which has on its outer end a hand, H, by which the wheels are turned, so as to bring the first tooth of the wheel to the time to commence starting. This is done by loosening the nut I on the end of the shaft, which allows the tube to turn freely on the shaft; then the hand H is brought to the dot K, on the disk D, the first tooth of each wheel being in line therewith. When the wheel is set, the nut is screwed tight against the hand H, which brings the inner end of the tube G tight against the collar *f* of the shaft, to secure the tube, so that the circuit-wheels C will turn with the shaft. The minute-shaft C', tube G, circuit-wheels C, disk D, bushing insulator *b*, hand H, and nut I are shown in connection in fig. 5. K' is a spring, which, by pulling the part 3 of the sliding changer E upwards, brings the arms 1 and 2 downwards, so as to keep them steadily in the notches of the racks F and F', in which they are set. The minute-shaft is connected with the pole J of the magnet by means of the wire L, through the pillar of the clock. The pole M of the magnet is connected with the zinc or positive pole O of the battery by means of the wire N. The negative pole O' of the battery is connected with the disk D by means of the wire P and cut-off Q on the side of the box A of the clock; so that when the teeth of the circuit-wheel with which the platinum point *c* is arranged strikes the latter, it closes the circuit on the magnet, and draws the armature R against the cores 1 and 2 of the magnetic poles M and J, and the armature being attached to the enlargement *g'*, of the rod *g*, of the hammer S, the latter at the same time strikes the bell T, and gives the alarm. The hammer is hung on the front end of the stud *h*. The armature R' is permanently attached to the cores 1 and 2 of the poles M and J by means of the screws *i* and *i'*, the latter confining the rear end of the armature to the bracket *j*, and give the alarm during the revolutions of the circuit-wheel. When the portions of time are to be changed, the operator takes hold of the arm 1 of the sliding changer, and elevates it above the rack, and moves it into the notch which is numbered to designate the portions of time which are desired for starting. When the alarm is not to be used, the cut-off Q is brought off from the plate V, as represented by red lines in fig. 1.

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

1. The combination of the circuit-wheels C, having different numbers of teeth, with the minute and hour-shafts, for giving alarms at different portions of time, arranged and operating substantially upon the principle and in the manner hereinbefore described.
2. The movable sliding-changer E, having a platinum point, *c*, in combination with the racks F and F', for changing the alarm to different portions of time, substantially as specified and shown.
3. The combination of the hand H with the circuit-wheels C, by means of the tube G, substantially as described, and for the purpose set forth.
4. The combination of the tube G and nut I with the circuit-wheels C and minute-shaft C', for setting the wheels to the starting-point, substantially as described.

In testimony that the above is our invention, we have hereunto set our hands and affixed our seals this twenty-third day of May, 1867.

JOSEPH CLARK. [L. S.]
WM. H. CLARK. [L. S.]

Witnesses:

JOHN WHITE,
STEPHEN USTICK.