(No Model.) 3 Sheets—Sheet 1.

E. F. H. H. LAUCKERT

ELECTRIC METER.

No. 399,336. Patented Mar. 12, 1889.

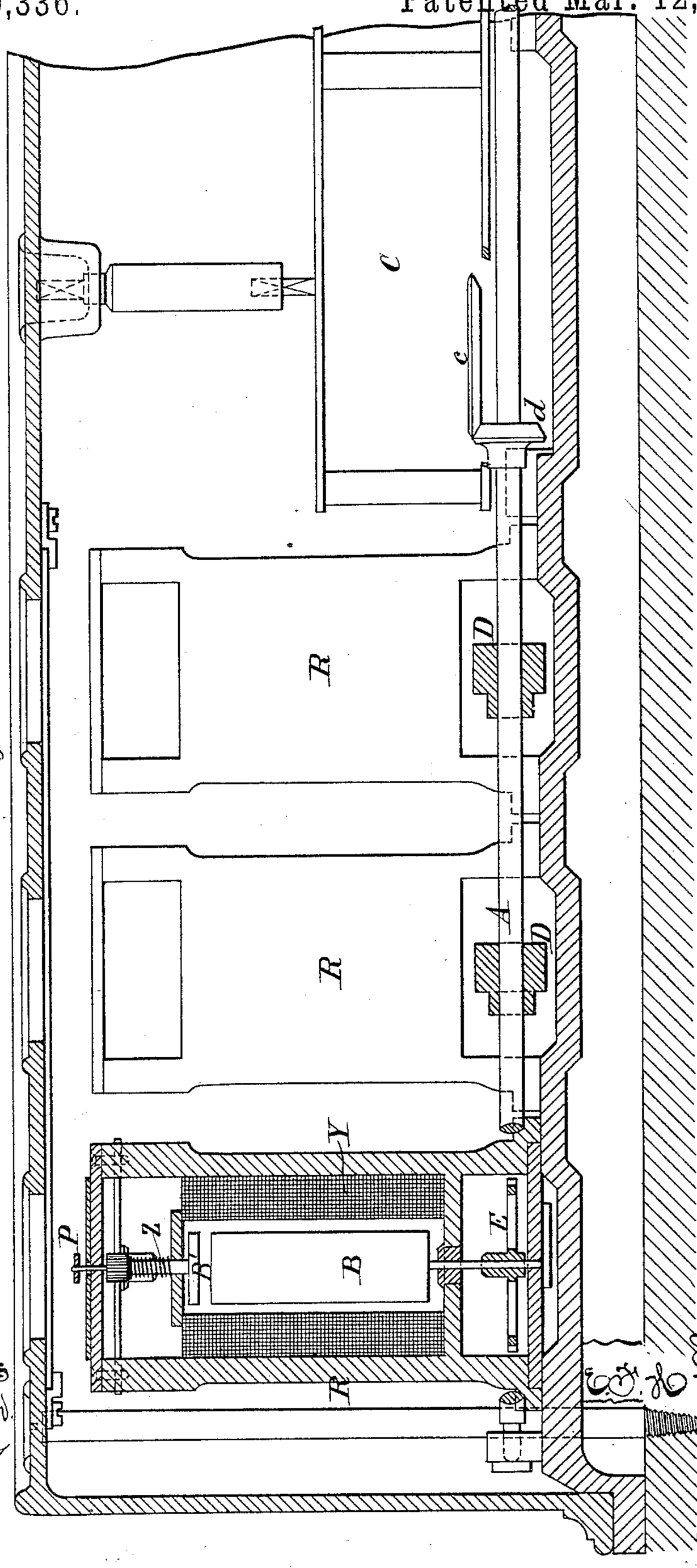

Fig. 1.

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By
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(No Model.) 3 Sheets—Sheet 2.

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ELECTRIC METER.

No. 399,336. Patented Mar. 12, 1889.

Fig. 4.

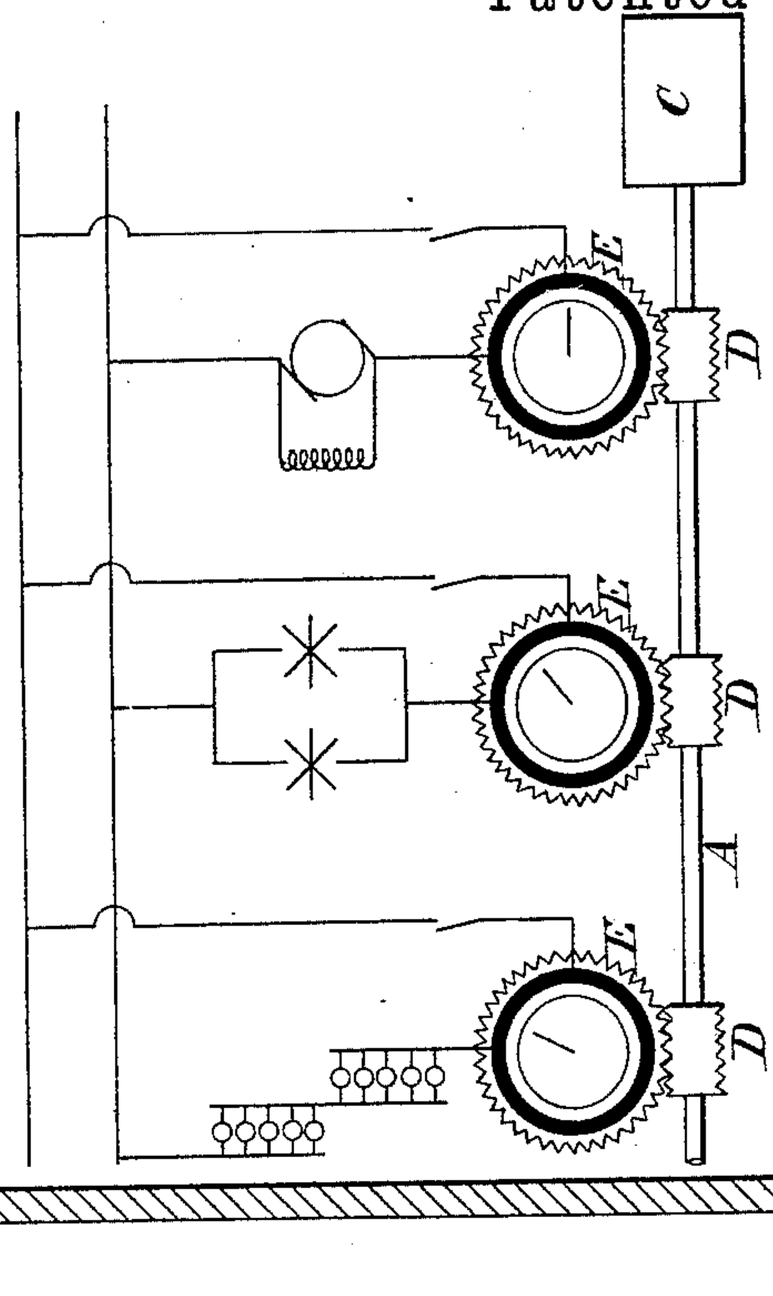
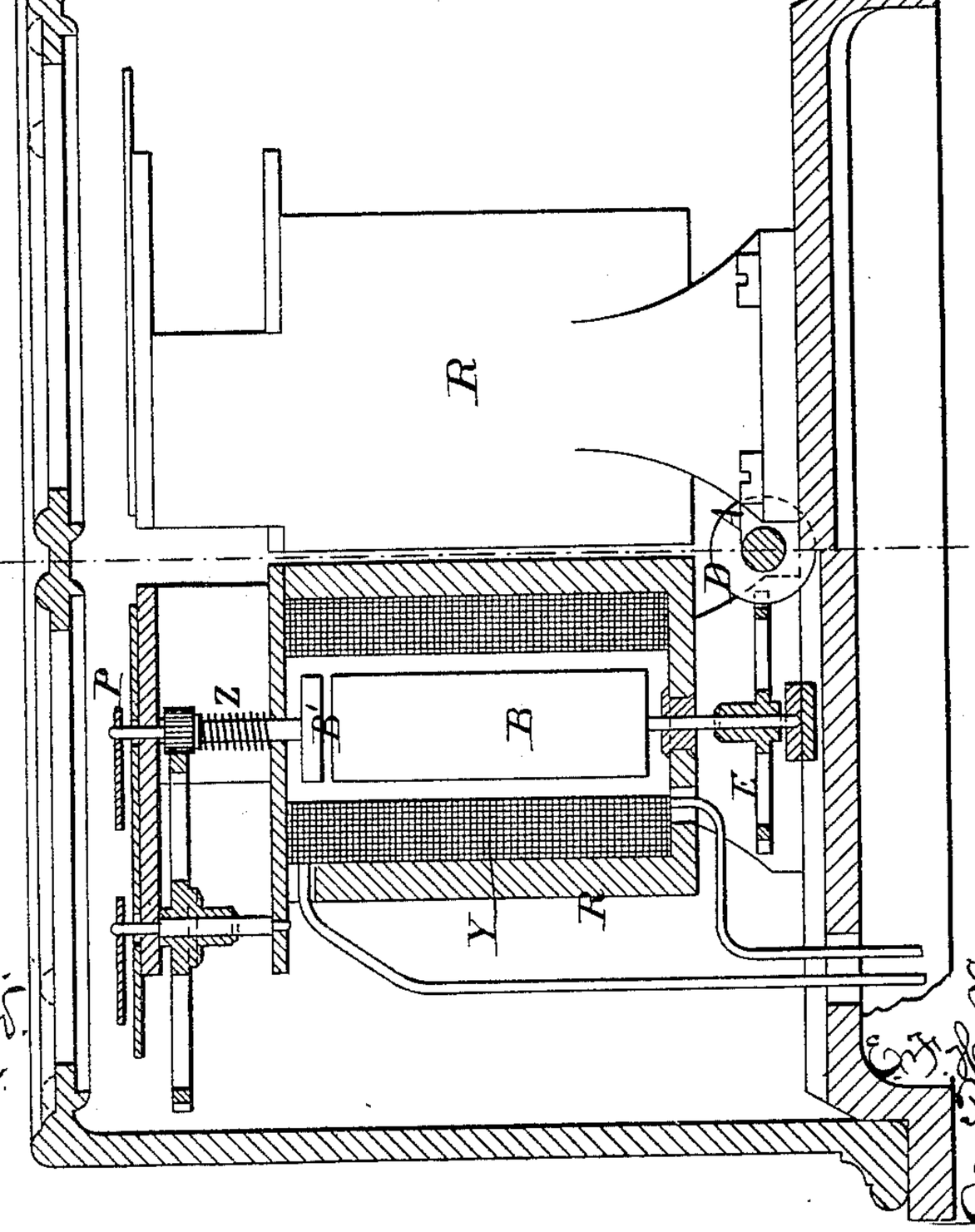


Fig. 2.



Witnesses.
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(No Model.) 3 Sheets—Sheet 3

E. F. H. H. LAUCKERT.

ELECTRIC METER.

No. 399,336. Patented Mar. 12, 1889.

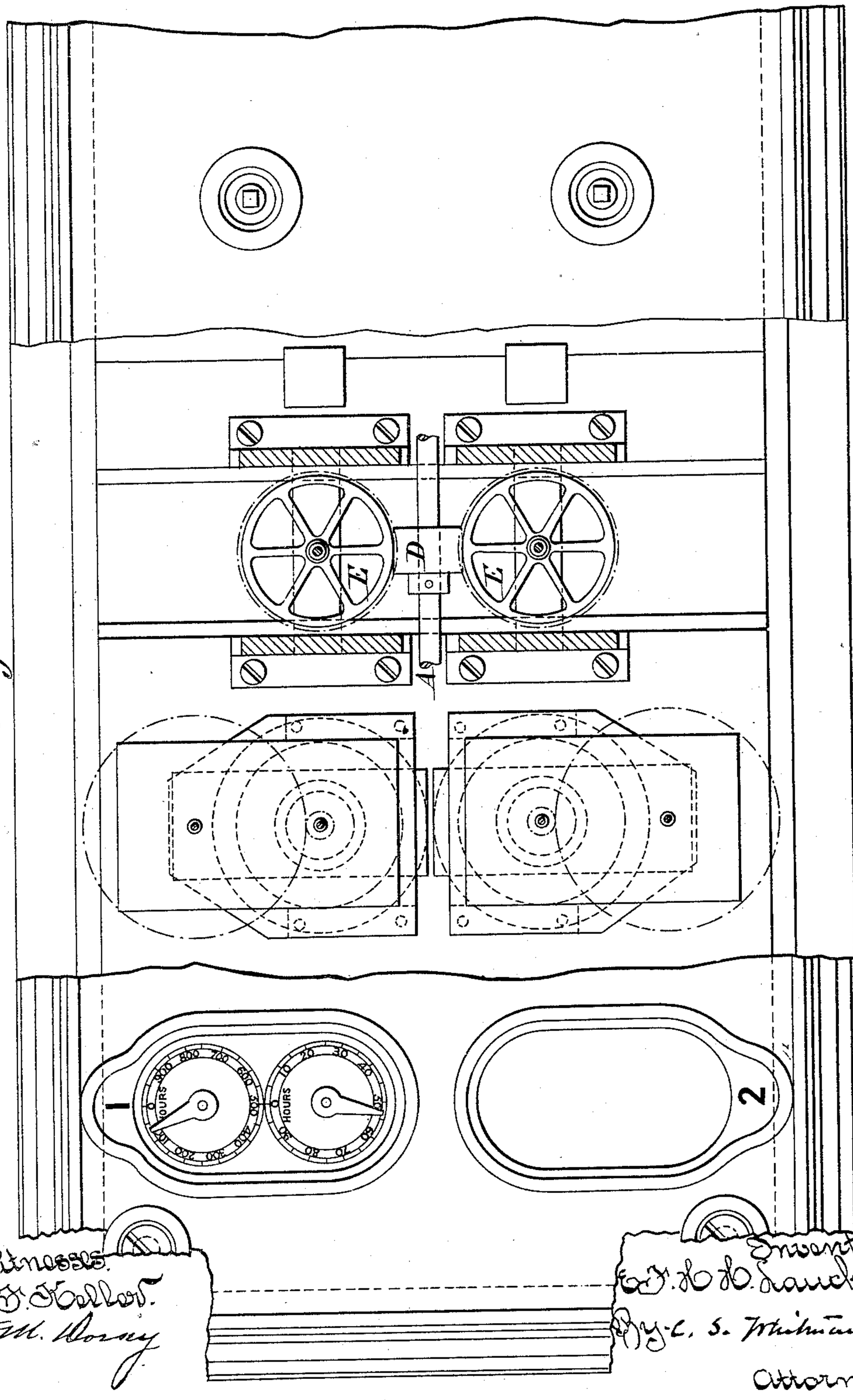

Fig. 3.

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UNITED STATES PATENT OFFICE.

EDWARD FREDERICK HERMANN HEINRICH LAUCKERT, OF CHARLTON, COUNTY OF KENT, ASSIGNOR TO SIEMENS BROTHERS & COMPANY, (LIMITED,) OF WESTMINSTER, ENGLAND.

ELECTRIC METER.

SPECIFICATION forming part of Letters Patent No. 399,336, dated March 12, 1889.

Application filed October 5, 1888. Serial No. 287,344. (No model.) Patented in England December 21, 1887, No. 17,582, and in France September 25, 1888, No. 193,196.

To all whom it may concern:

Be it known that I, EDWARD FREDERICK HERMANN HEINRICH LAUCKERT, a citizen of Hesse, residing at Charlton, in the county of Kent, England, have invented a new and useful Apparatus for Indicating the Time During which Electricity is used for Lighting or other Purposes, (which has been patented in France by Letters Patent No. 193,196, dated September 25, 1888, and for which a patent has been solicited in Great Britain, which patent, when granted, will be No. 17,582, and bear date December 21, 1887,) of which the following is a specification.

My invention relates to apparatus for indicating the time during which electricity is used for a lamp or a group of lamps, or for any other purpose to which electricity is applied.

I provide for each lamp or consumer or each group of these a counter mechanism of any suitable known kind. It may be in its simplest form merely a graduated dial with an index. This counter or index is connected with clock-work by a magnetic clutch consisting of a pair of iron bosses facing each other, the one of them on an axle driven by the clock-work, the other on an axle belonging to the counter or index, either or both of these bosses being surrounded by a coil of wire forming part of the circuit of the lamp or other consumer of electricity, or being in a shunt from that circuit. When a current passes through the coil, the two bosses are held together by magnetic attraction and the counter or index is driven by the clockwork, indicating and registering the time during which the current passes. When the current ceases, the clutch is released and the counter or index remains at rest, while the clock-work may continue to move.

Figure 1 of the accompanying drawings is a part longitudinal section. Fig. 2 is a transverse section. Fig. 3 is a part plan, and Fig. 4 a diagram, of the arrangement of apparatus according to this invention for indicating the time during which electrical currents are used in a number of circuits.

The apparatus shown is one applicable to twelve separate circuits, three pairs of indicators being arranged on each side of clock-work which occupies the middle of the casing; but, obviously, by varying the number of indicating parts the apparatus might be suited to a greater or less number of circuits.

In the middle of a closed casing is fixed a clock-work, C, which, by means of bevel-gear *c d*, gives rotation to a spindle, A, that extends along the casing and has fixed on it a number of worms, D. Each of these worms engages with a pair of wheels, E, one on each side of it, and thus a number of spindles carrying iron cylinders B are caused to revolve. At a little distance from the end of each of the cylinders B is an iron disk, B′, which is fixed on the spindle of an index, P, and which is drawn away from B by a spring, Z. The cylinder B is surrounded by a coil of insulated wire, Y, within an iron box, R. This wire forms part of the circuit to which the indicator is applied, or of a shunt to that circuit, so that when an electrical current passes through the circuit the iron cylinder B becomes magnetized and attracts the iron disk B′, thus forming a magnetic clutch, whereby the index P is caused to revolve along with the cylinder B, and therefore at a definite rate as determined by the clock-work and the proportions of the connecting-gear. The spindle of the index P is geared to the spindle of another index in the proportion of one to ten, or in any other desired proportion, and there may be several such indices indicating units, tens, &c., of hours or other denominations of time, these indices showing on dials (seen through glasses in the cover) the time during which currents are maintained in the several circuits. As soon as the current in any circuit ceases, the cylinder B ceases to attract, and the disk B′, being drawn away from B by the spring Z, the indices for that circuit stop.

Fig. 4 shows diagrammatically how several different circuits—such as those for glow-lamps, arc-lamps, or motors—can have their time-indicators worked by one set of clock-work.

Having thus described the nature of my in-

vention and the best means I know for carrying the same into practical effect, I claim—

In apparatus for indicating the time during which electricity is used, the combination of clock-work, electro-magnetic clutches driven thereby, indices, and coils, through which a current of electricity passes during the time to be measured, exciting the electro-magnetic clutches, and causing them to engage and move the said indices, as and for the purposes described.

In testimony I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD FREDERICK
HERMANN HEINRICH LAUCKERT.

Witnesses:
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Waterloo Place, S. W., Notary's Clerk.
F. ALLCROFT HARDING,
Waterloo Place, Surveyor.