

(No Model.)

J. W. LAWSON.

FIELD MAGNET FOR DYNAMO ELECTRIC MACHINES.

No. 297,273.

Patented Apr. 22, 1884.

Fig. 1.

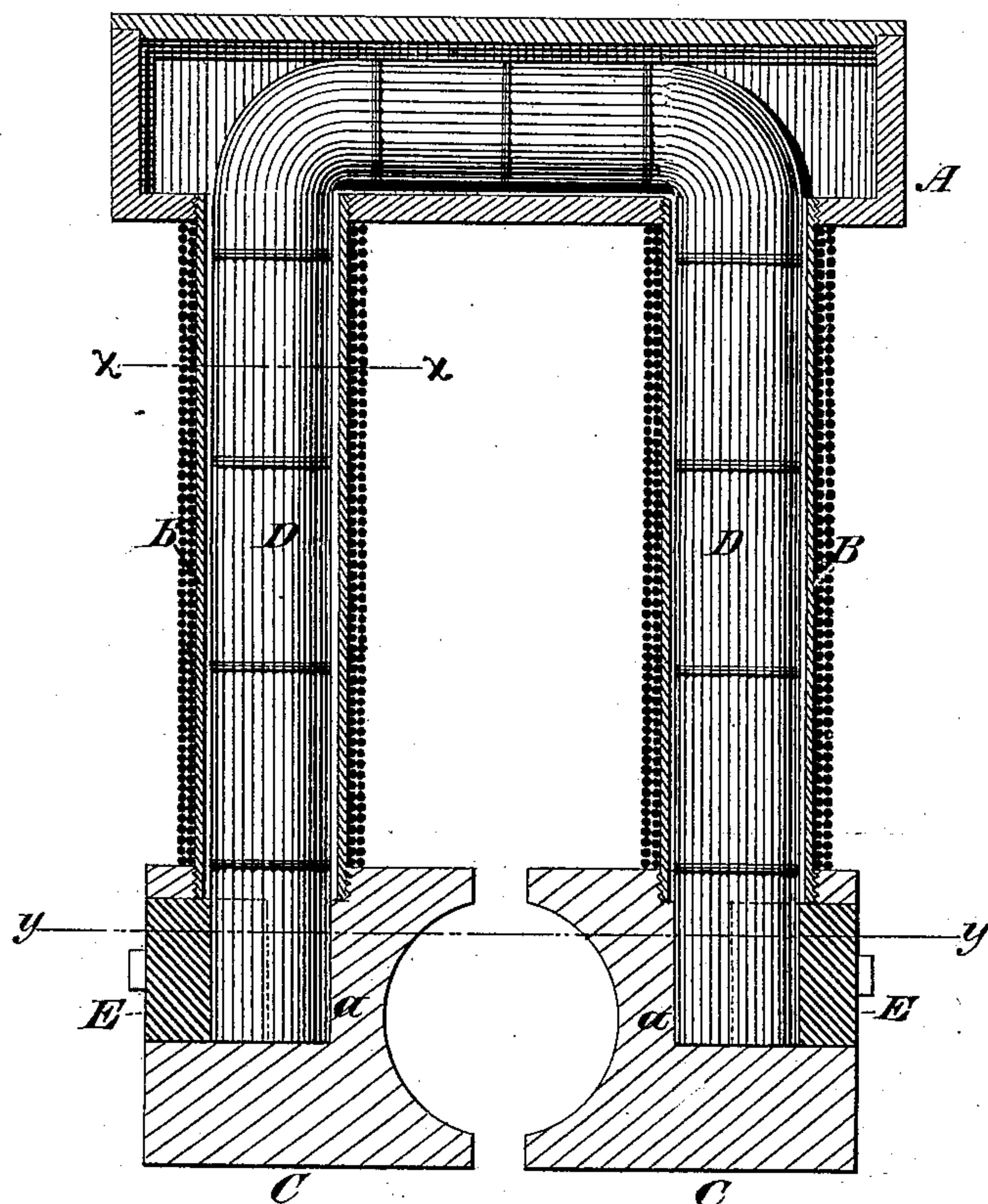
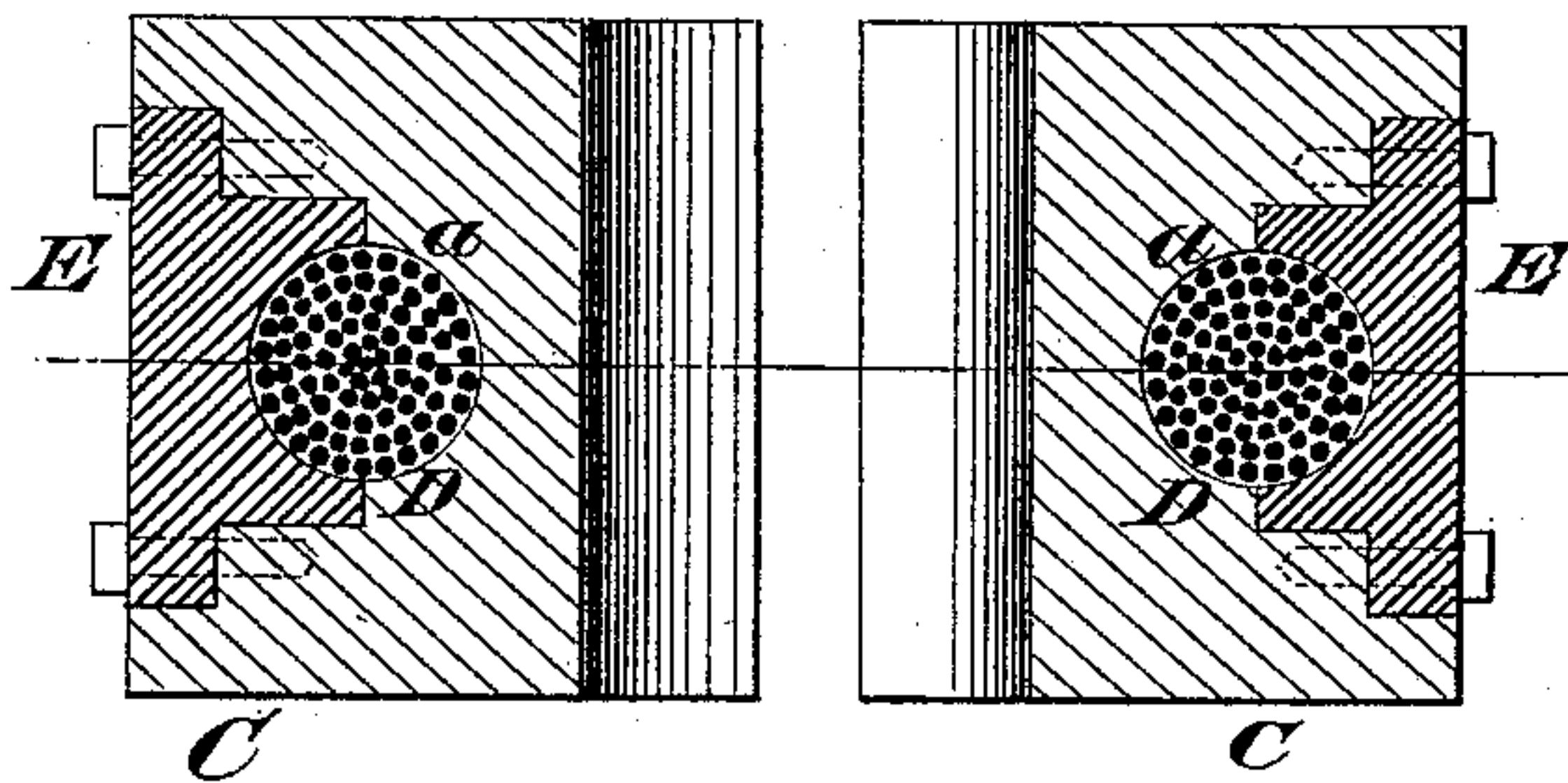


Fig. 3.

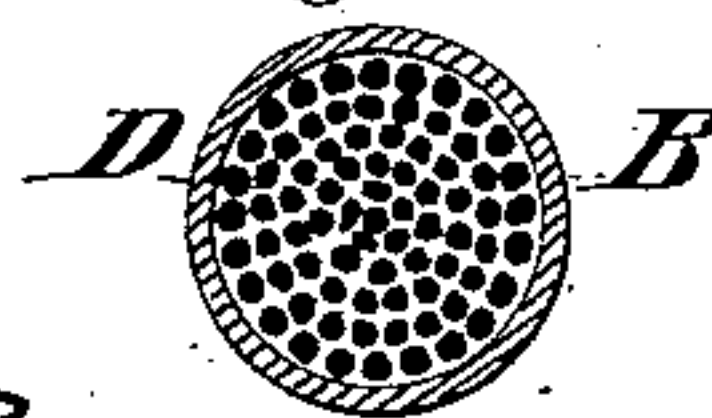


WITNESSES:

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Fig. 2.



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FIELD-MAGNET FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 297,273, dated April 22, 1884.

Application filed November 16, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. LAWSON, a citizen of the United States, residing in Harrison, in the county of Hudson and State of New Jersey, have invented a new and useful Improvement in Field-Magnets; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to the class of field-magnets of dynamo and magneto electric machines and electric motors in which the core is partly or wholly formed of wires; and it consists in combining a clamp with the pole-pieces and wire cores of such magnets to bind the wire core firmly to the pole-pieces to secure an intimate magnetic relation between the core and the pole-pieces.

In dynamos, especially of large size, as ordinarily made, the field-magnet, being composed of a large mass of solid material, requires an appreciable time to receive its maximum charge of magnetism. Time is also required for the demagnetization of the magnet. In systems of electric circuits in which the current in the circuit external to the dynamo is controlled by the strength of the magnetic field in which the armature revolves, it is desirable to effect the changes in the strength of the magnetic field very rapidly, to avoid marked fluctuations in the external circuit; but when the cores of the field-magnets in the dynamos used in such systems consist of a solid mass of material, the necessary rapid changes in the strength of the magnetic field cannot take place, owing to the tardiness of such masses in receiving and parting with their magnetism. This effect in large magnets is due partly to the difficulty of perfectly annealing the cores and partly to residual magnetism. To avoid these defects in the field-magnets of dynamo and magneto electric machines and in electric motors, and to produce a strong and effective field-magnet, is the object of my invention.

Figure 1 of the drawings is a vertical transverse section of a field-magnet embodying the essential features of my invention. Fig. 2 is a horizontal section through one core of the field magnet, taken in line *xx* in Fig. 1. Fig. 3 is a horizontal section taken on line *yy* in Fig. 1.

The yoke A of the field-magnet is hollow,

and the tubular cores B are screwed into the yoke A or formed integral therewith, and to the lower ends of the cores B are attached the pole-pieces C, between which the armature revolves. A bundle, D, of soft-iron wire, bent twice at right angles, extends from the hollow yoke A, through the tubular cores B, into recesses *a*, formed in the pole-pieces C. Concave clamping-pieces E, fitted to the pole-pieces C and secured thereto by bolts, clamp the lower ends of the wire bundle D in the pole-pieces C.

Both the form and construction of my improved field-magnet may be varied to adapt it to the requirements of different forms of dynamos, and any approved means of securing contact between the ends of the wire bundle D and the pole-pieces may be substituted for the clamping-pieces E. In some cases I may place wires in the tubular cores only, and employ a solid yoke, and in other instances I may clamp the ends of the wire bundle D in the pole-pieces and wind the conductor directly on the wire bundle, omitting the inclosing-tube.

In my improved field-magnet, the tubular cores B being thin and of soft iron, and the wires contained by the tubular cores and yoke, and forming the mass of the magnet, being very soft, the entire magnet is readily influenced by the energizing current traversing the coils of the magnet, admitting of a very close and accurate regulation of the current delivered by the armature of the dynamo. Besides this advantage, a magnet of this construction has a minimum of residual magnetism, and is capable of receiving a stronger magnetic charge than a magnet formed of a solid mass of iron.

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

1. In a field-magnet, the combination of the hollow yoke A, tubular cores B, pole-pieces C, and wire bundle D, and clamps for binding the said wire bundle to the pole-pieces C, as specified.

2. In a field-magnet, the combination, with the wire bundle D and pole-pieces C, of a clamp for binding the said wire bundle to the pole-pieces.

Witnesses: JOHN W. LAWSON.

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