

(No Model.)

2 Sheets—Sheet 1.

D. S. McELROY.

ELECTRO MAGNET.

No. 413,411.

Patented Oct. 22, 1889.

Fig: 1.

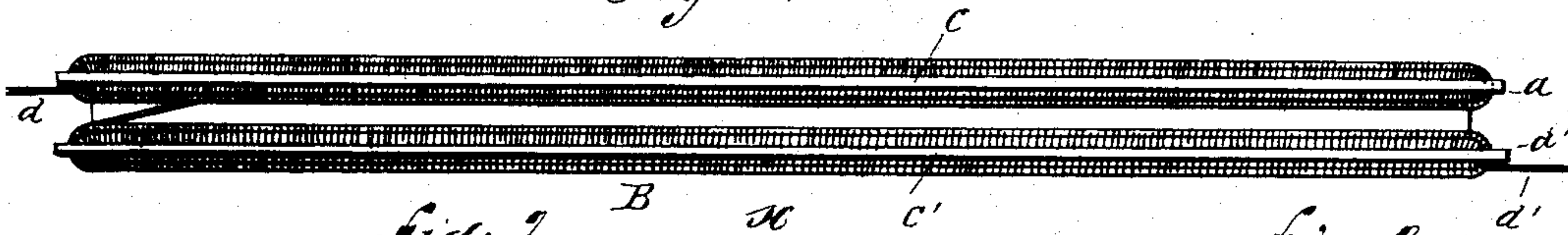


Fig: 2.

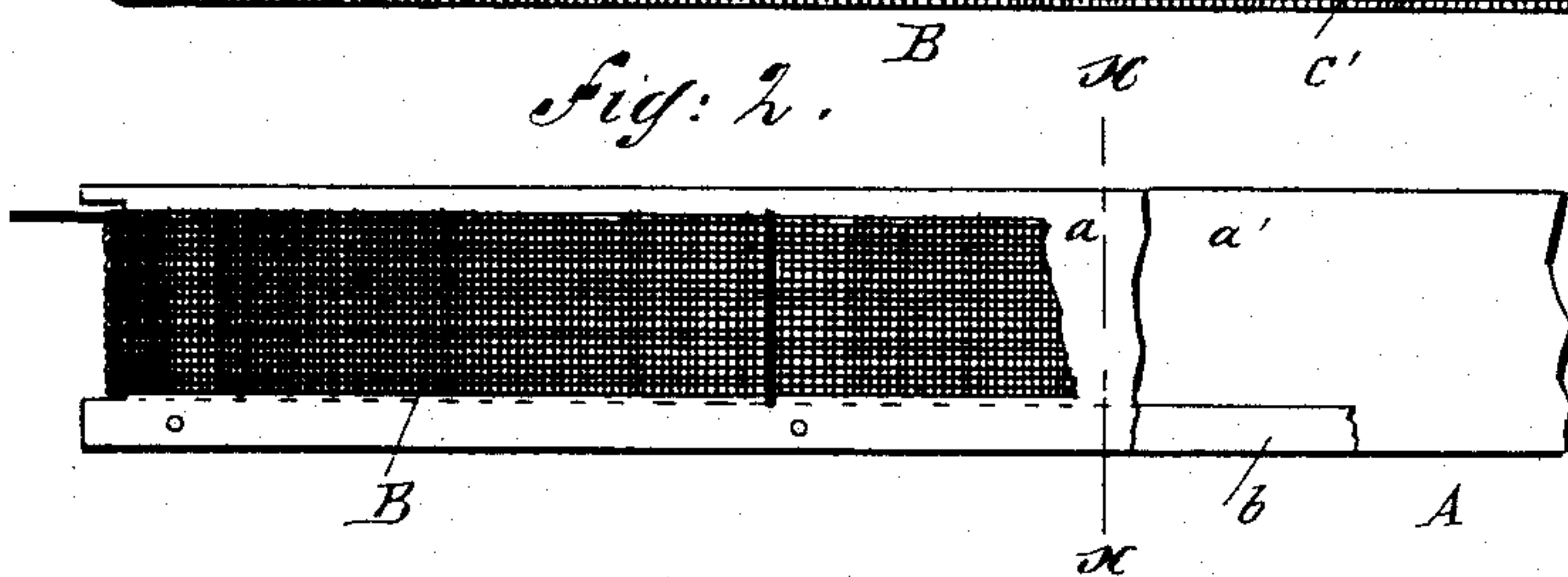


Fig: 3.

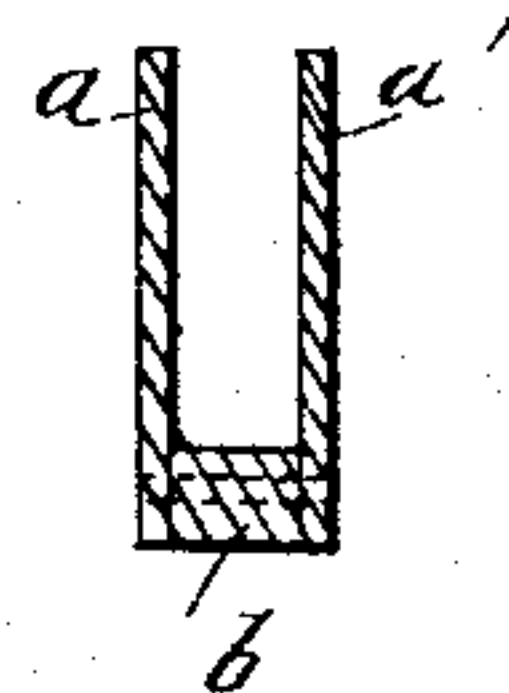


Fig: 4.

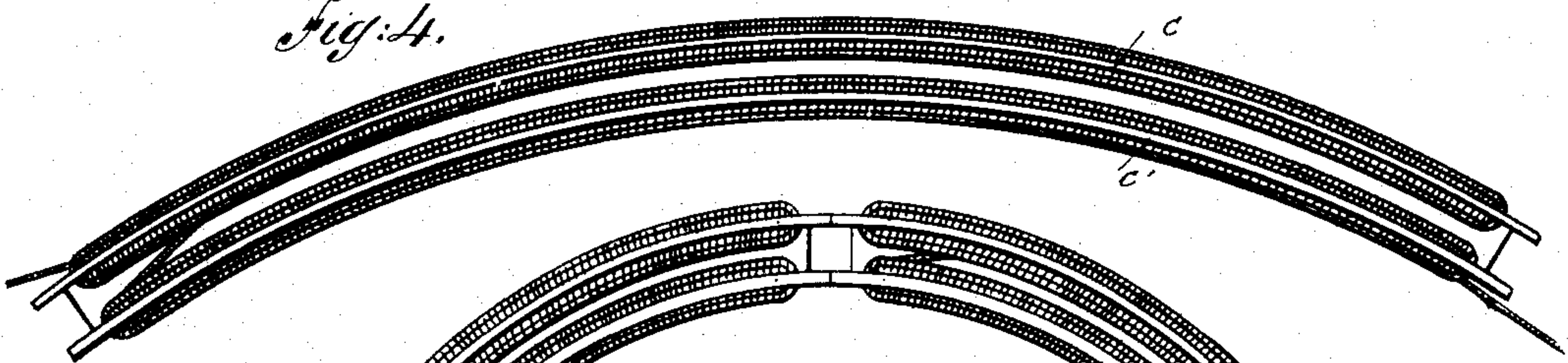


Fig: 5.

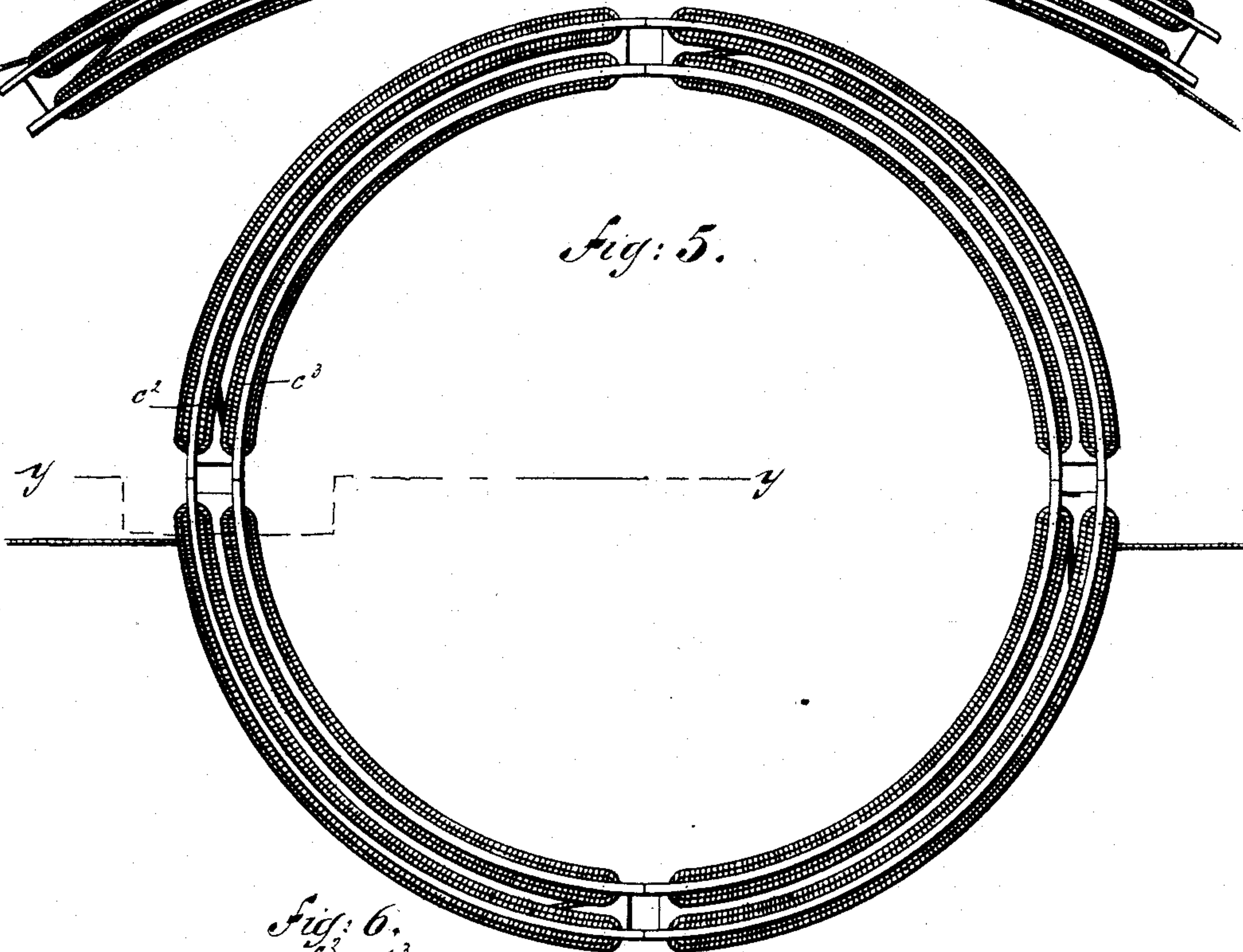
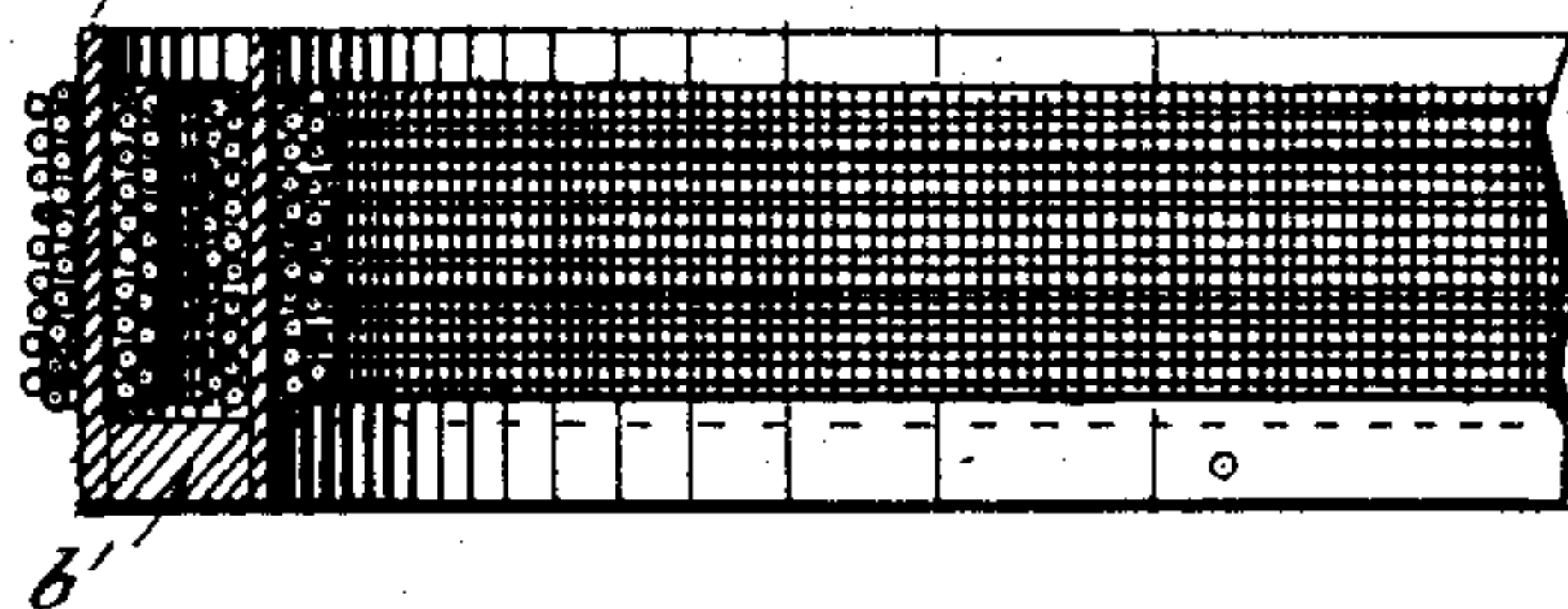


Fig: 6.



WITNESSES:

Chas. Vida
C. Sedgwick

BY

INVENTOR:

D. S. McElroy

Munn & Co.

ATTORNEYS.

(No Model.)

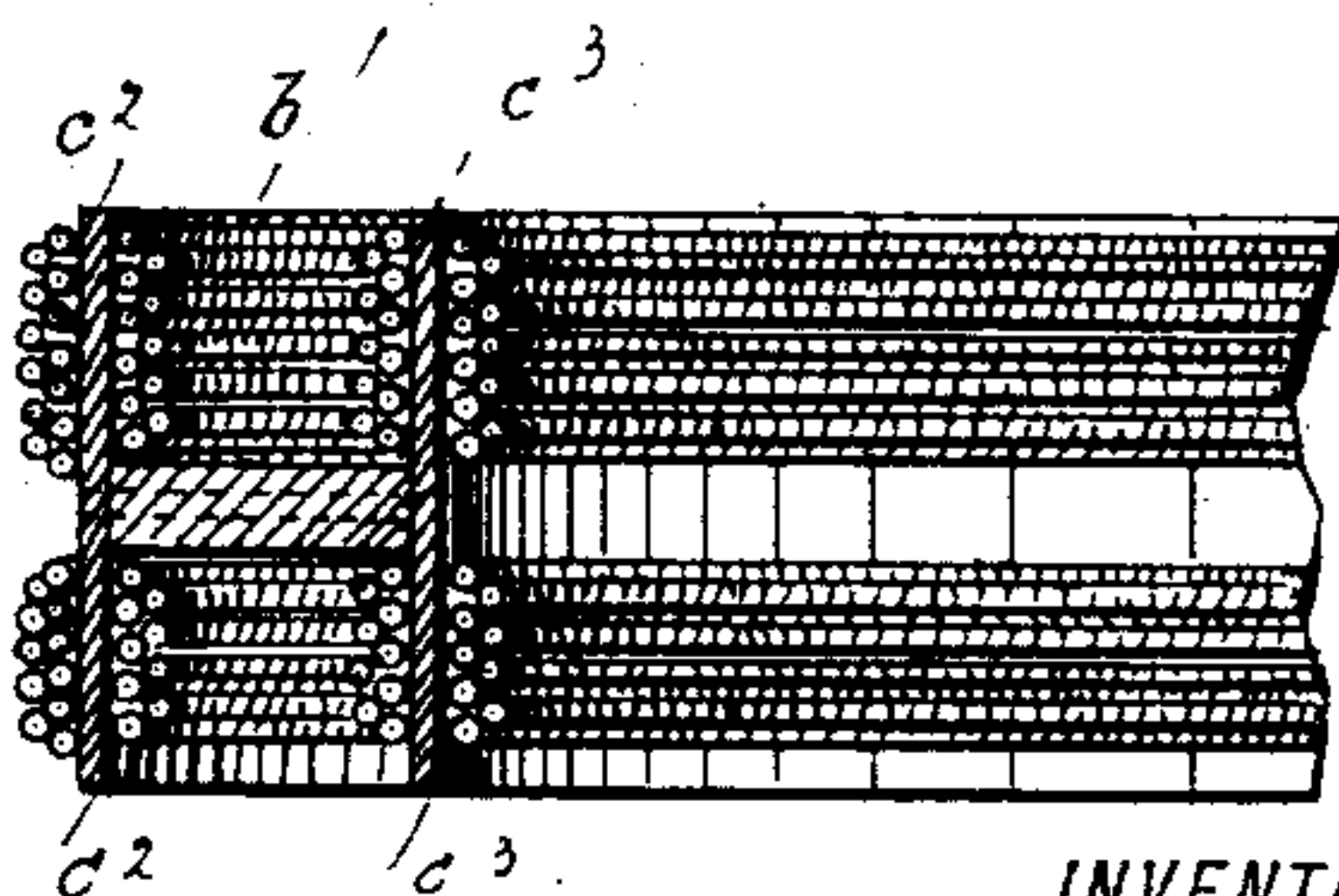
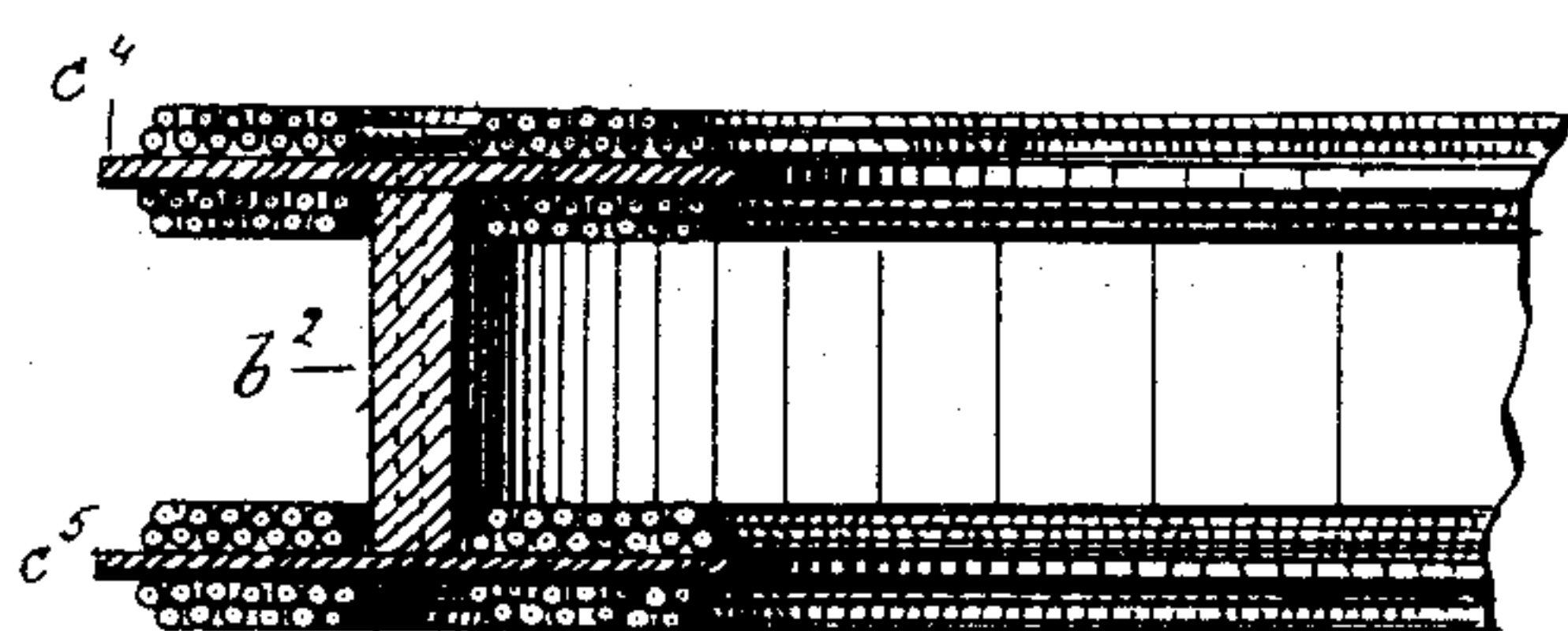
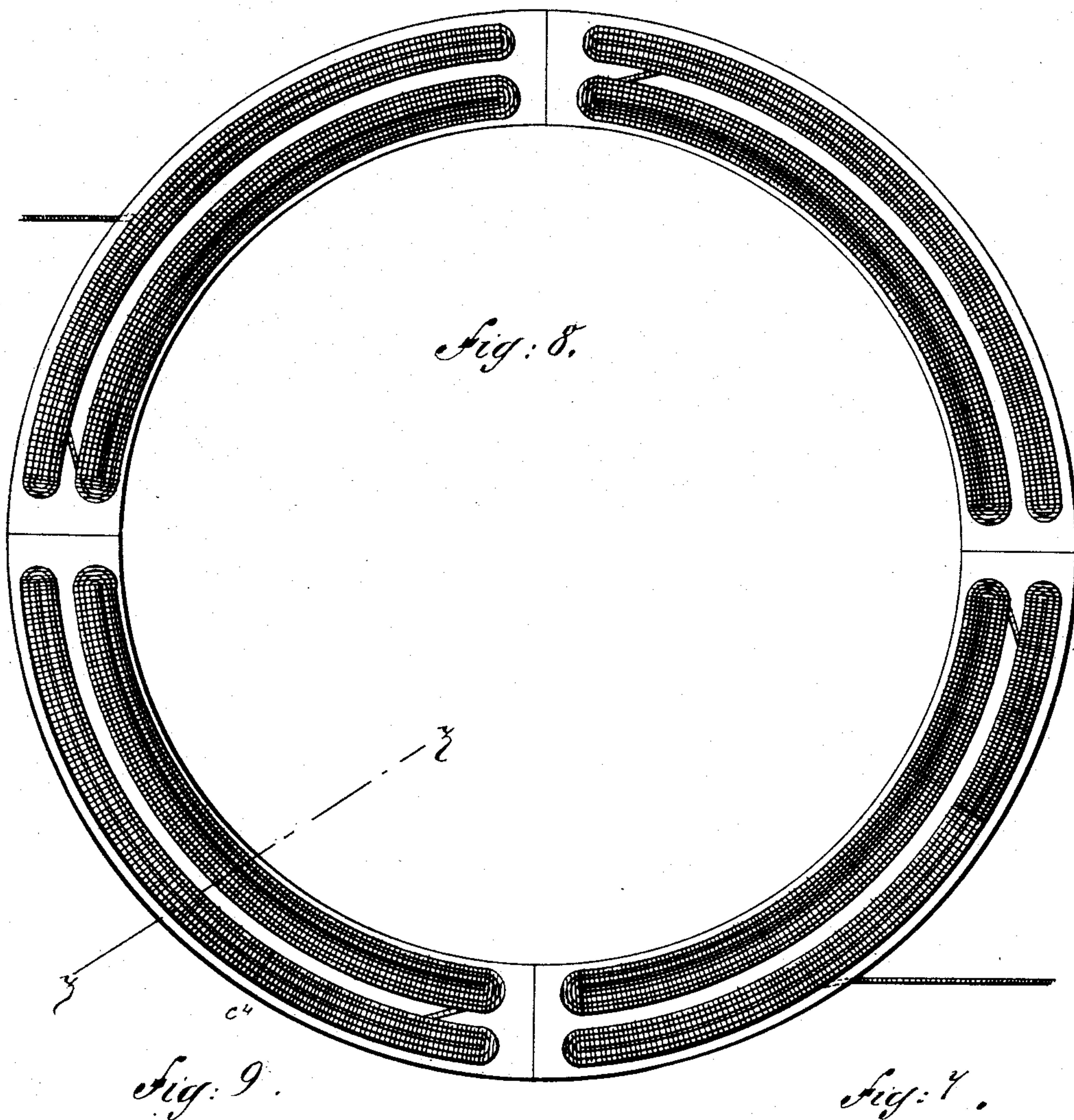
2 Sheets—Sheet 2.

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WITNESSES:

Almus. Nida.
to Sedgwick

INVENTOR:

D. S. McElroy

BY

Munn & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

DANIEL S. McELROY, OF NEW YORK, N. Y.

ELECTRO-MAGNET.

SPECIFICATION forming part of Letters Patent No. 413,411, dated October 22, 1889.

Application filed May 16, 1889. Serial No. 310,983. (No model.)

To all whom it may concern:

Be it known that I, DANIEL S. McELROY, of the city, county, and State of New York, have invented a new and Improved Electro-Magnet, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a plan view of a straight magnet constructed according to my improvement. Fig. 2 is a side elevation with a portion broken away to more clearly show the construction. Fig. 3 is a transverse section taken on line $x x$ in Fig. 2. Fig. 4 is a plan view of a curved magnet. Fig. 5 is a plan view of a circular magnet, and Fig. 6 is a transverse section taken on line $y y$ in Fig. 5. Fig. 7 is a transverse section of a double magnet constructed on the plan shown in Fig. 5. Fig. 8 is a plan view of a circular magnet having its poles arranged radially, and Fig. 9 is a transverse section taken on line $z z$ in Fig. 8.

Similar letters of reference indicate corresponding parts in all the views.

The object of my invention is to construct an electro-magnet for purposes requiring an extended field of force, more particularly for railway-signaling, as described in another application of even date herewith, and in electric motors.

My invention consists in a magnet having cores greatly extended in one direction, so as to lengthen the field of force to enable it to act upon a very long armature, or upon a short armature during its passage before the face of a magnet in the direction of its length.

The body A of the straight magnet is formed of two soft-iron bars $a a'$, connected by a bar b , forming the yoke of the magnet. The bars $a a'$ are notched at the ends to receive the conductor B, which is wound longitudinally upon the bars. The magnet thus formed has extended polar faces $c c'$. The conductor of one leg of the magnet is connected with that of the other in the same manner as an ordinary magnet—that is to say, the corresponding inner ends of the coils are connected together, as shown in Fig. 1, while the outer terminals $d d'$ are preferably brought out upon opposite ends of the magnet to permit of connecting a number of such magnets together in series.

In Fig. 4 is shown a magnet which, with the exception of its curvature, is in all re-

spects like the magnets shown in Figs. 1 and 2, and will therefore need no special description.

Fig. 5 shows a magnet having annular cores $c^2 c^3$, connected with an annular yoke b' . Each annular core $c^2 c^3$ is provided with a winding upon the inside and outside thereof, and the current is made to traverse the conductor of the magnet in the manner indicated in Fig. 1, thereby producing opposite polarity in the two cores and providing a magnet having an extended annular field.

In the circular magnet shown in Fig. 8 the construction is substantially the same as that shown in Fig. 5, except that the north and south poles of each half lie in the same plane, the lines of force emanating from the magnet outwardly and inwardly on radial lines. In this case the legs of the magnet consist of flat annular disks $c^4 c^5$, connected by a short cylindrical yoke b^2 , as shown in the sectional view, Fig. 9.

The circular magnets are preferably formed of a series of sections, as clearly shown in the drawings.

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

1. An electro-magnet consisting of a yoke provided with side extensions, and coils wound on the said side extensions, the ends of the yoke and side extensions projecting beyond the coils, whereby provision is made for connecting a series of magnets together, substantially as described.

2. An electro-magnet consisting of a curved yoke provided with side extensions, and coils wound on said extensions, the ends of the yoke and side extensions projecting beyond the coils, substantially as and for the purpose set forth.

3. A circular magnet consisting of a series of sections, each formed of an annular yoke having extensions, and coils wound on the said extensions, substantially as specified.

4. A circular magnet consisting of a series of sections, each formed of a curved yoke having side extensions, and coils wound on the side extensions, the ends of the yoke and side extensions projecting beyond the coils, and the several sections being united, substantially as described.

DANIEL S. McELROY.

Witnesses:

E. M. CLARK,
C. SEDGWICK.