

A. E. FRANCIS.
CIPHER TYPE FOR ENGRAVING MACHINES.

APPLICATION FILED JAN. 29, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 4.

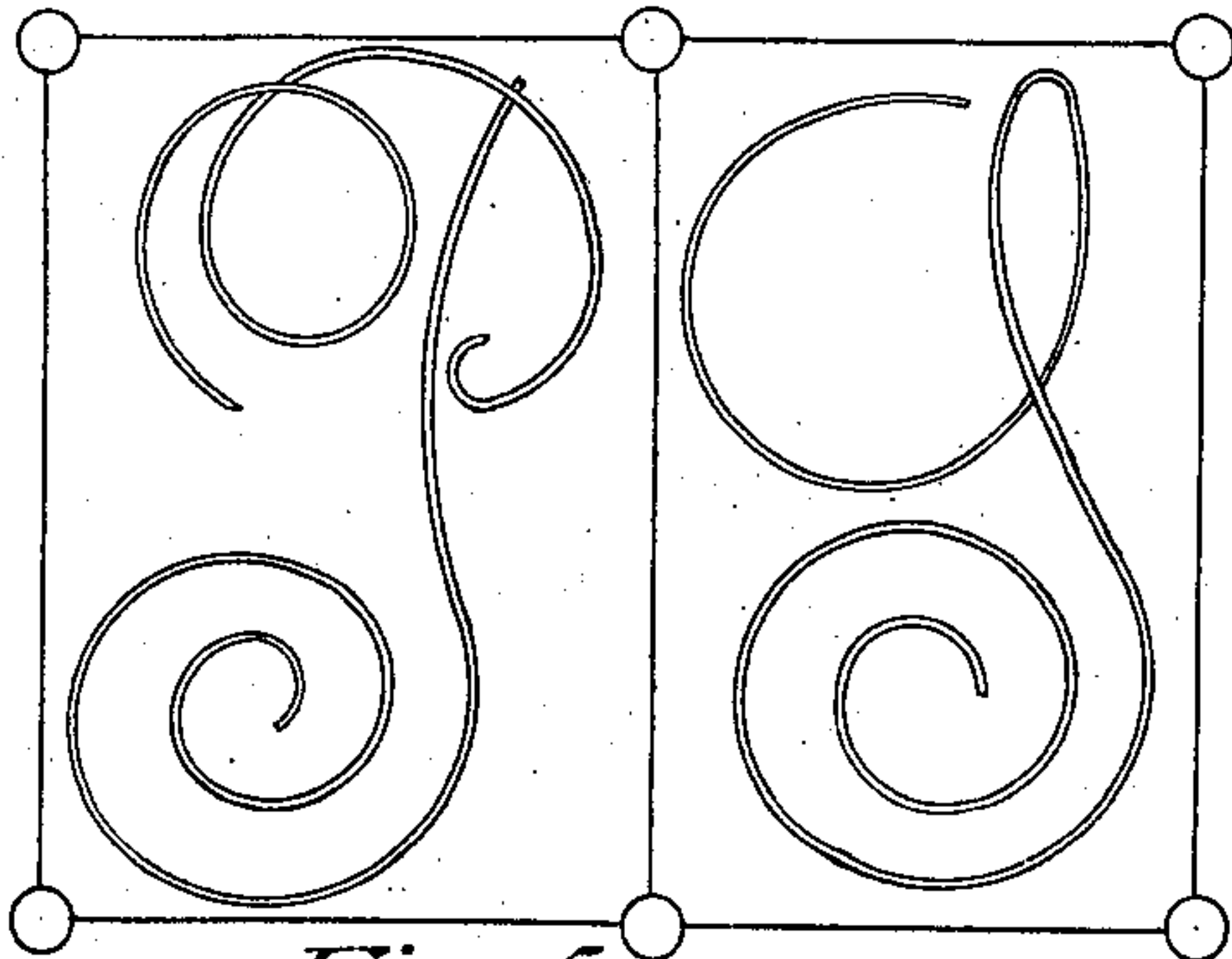


Fig. 8.

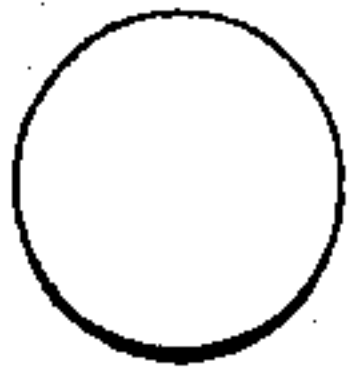


Fig. 5.

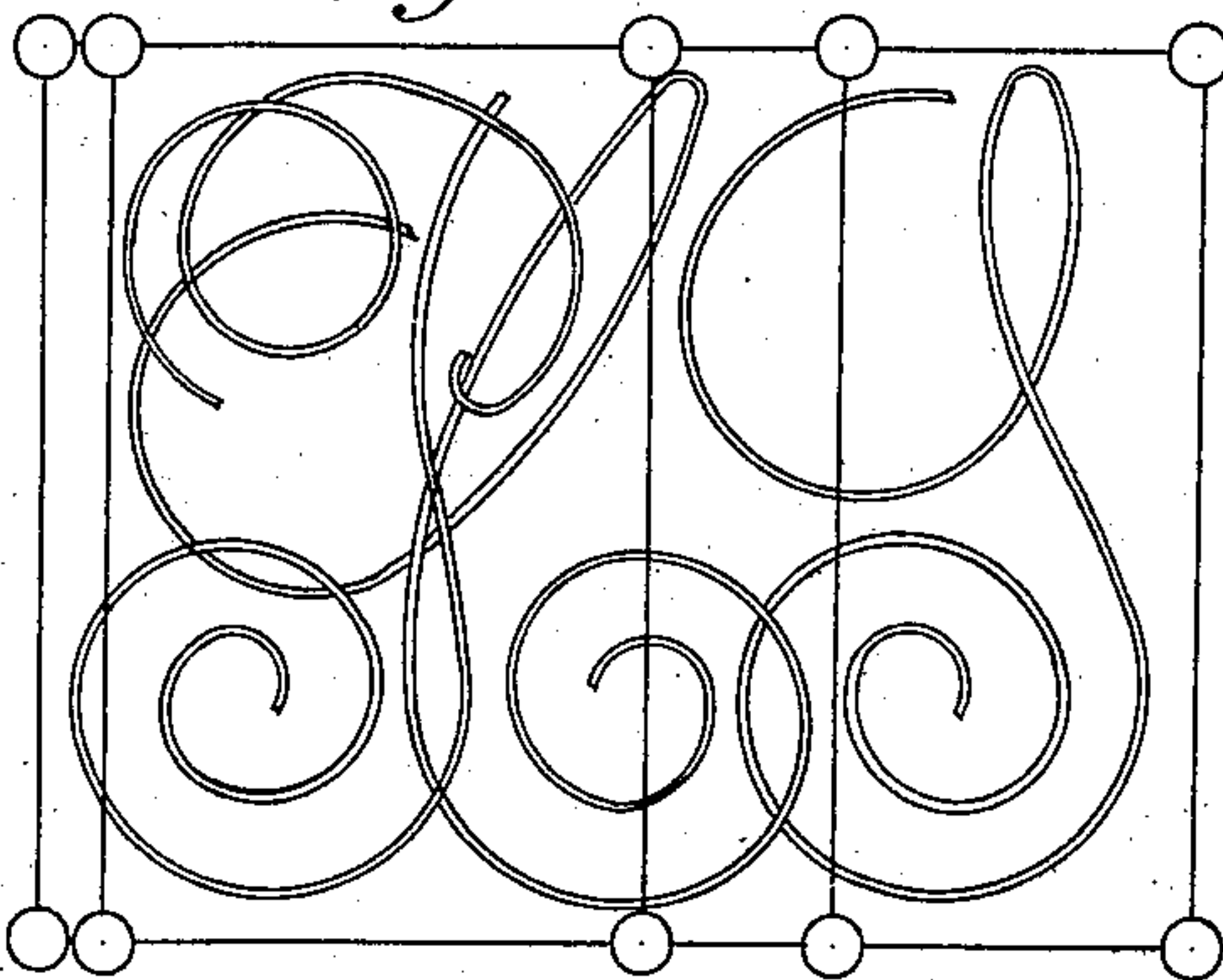


Fig. 3.

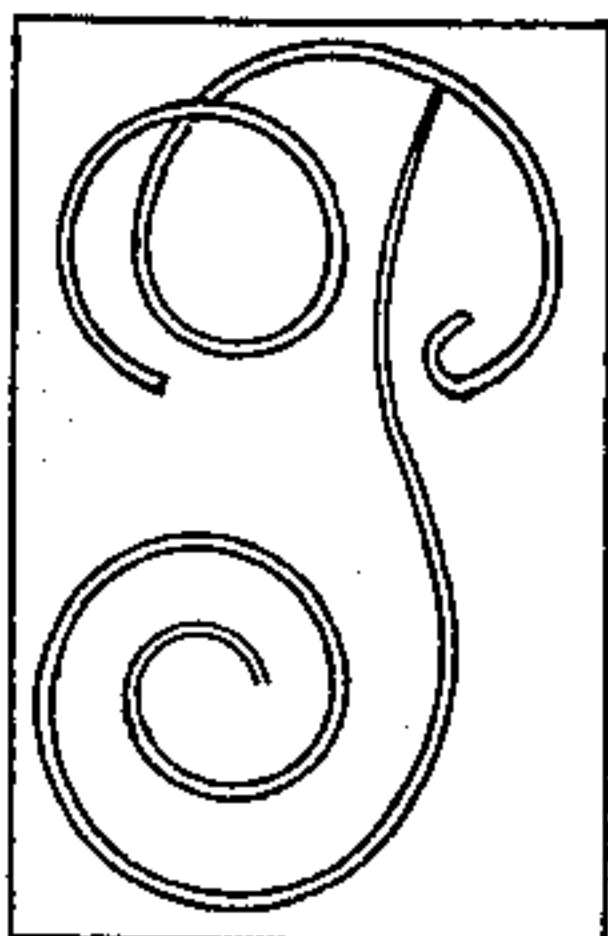


Fig. 2.

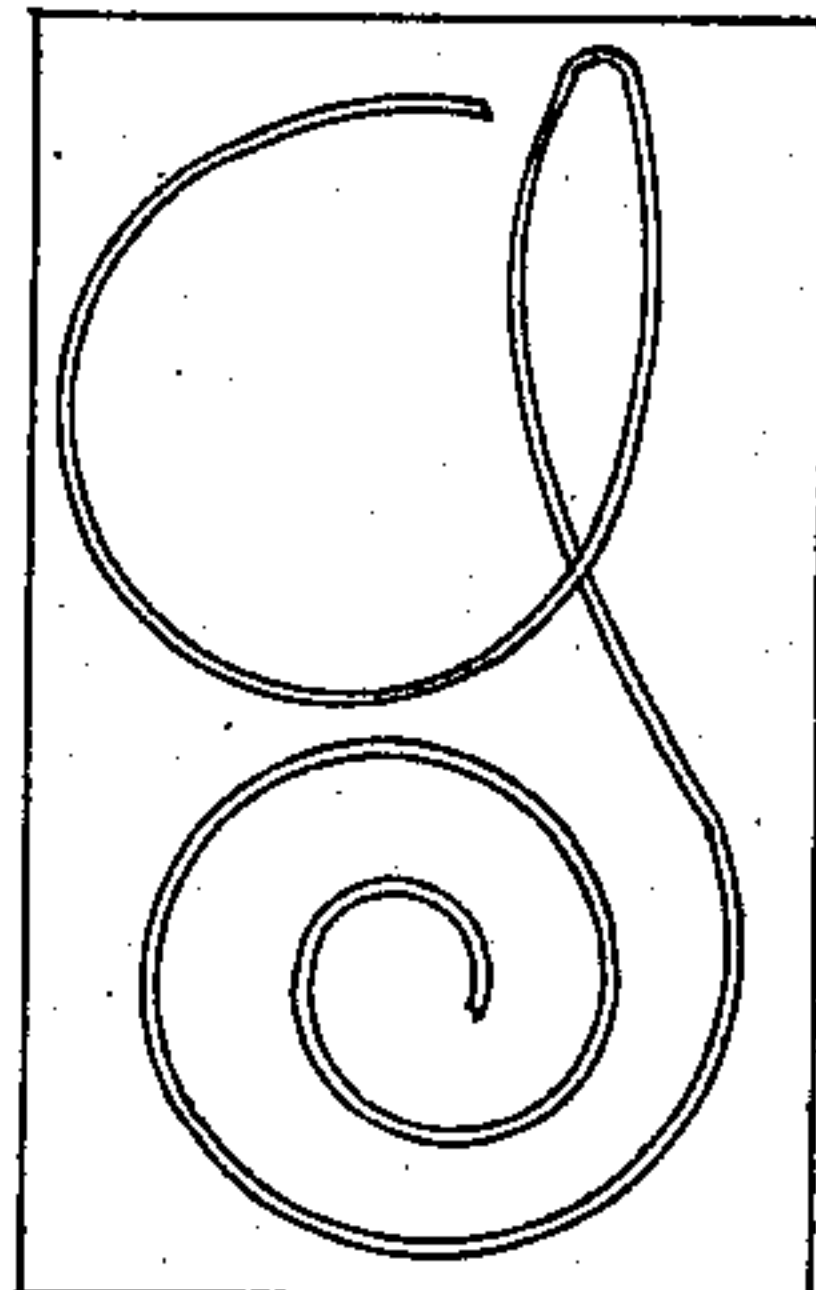
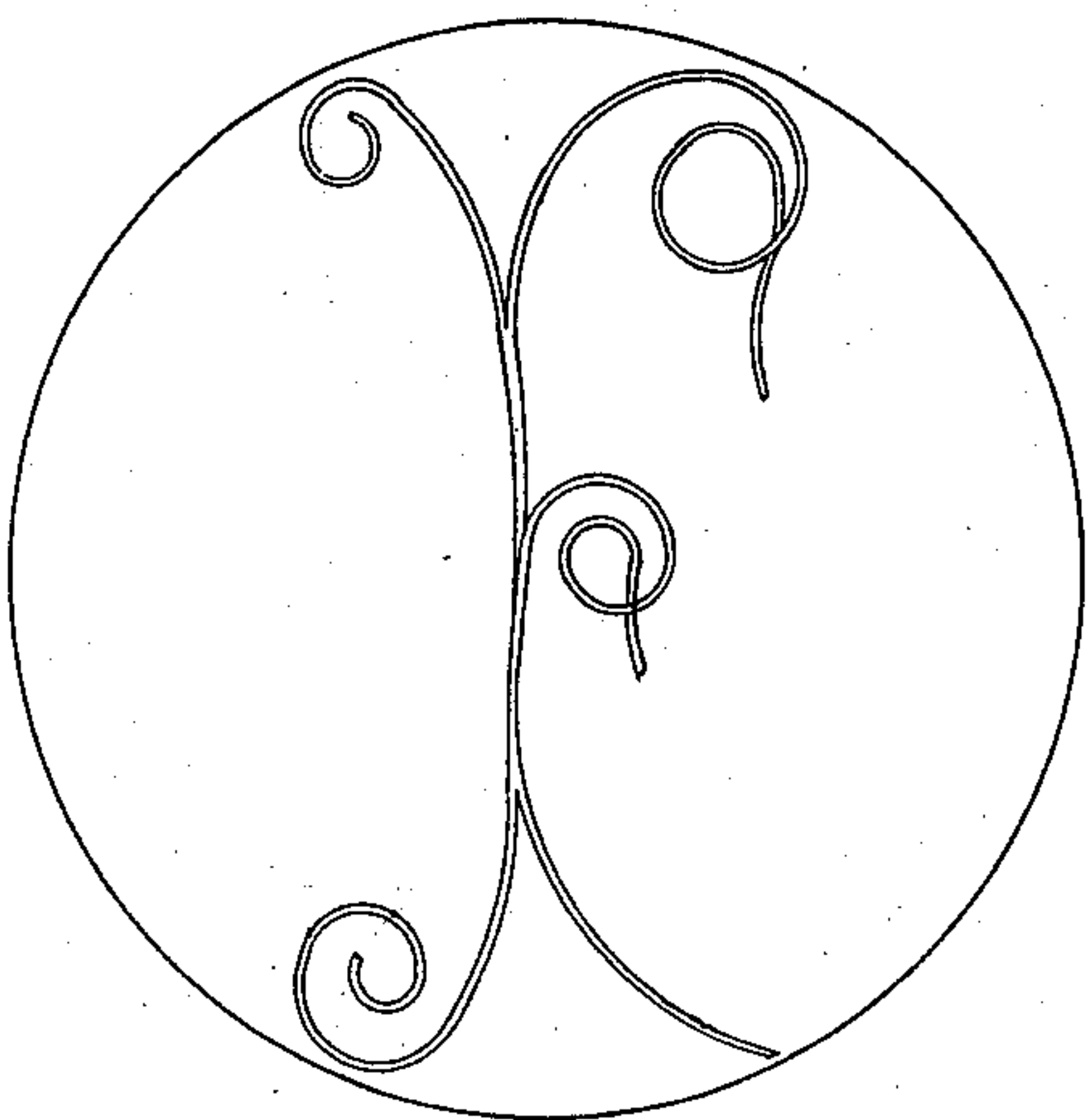


Fig. 1.



Witnesses:

M. E. Francis
Jenny L. Francis.

Inventor:
Allan E. Francis

No. 742,180.

PATENTED OCT. 27, 1903.

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CIPHER TYPE FOR ENGRAVING MACHINES.

APPLICATION FILED JAN. 29, 1903.

NO MODEL.

2 SHEETS—SHEET 2.

Fig. 6.

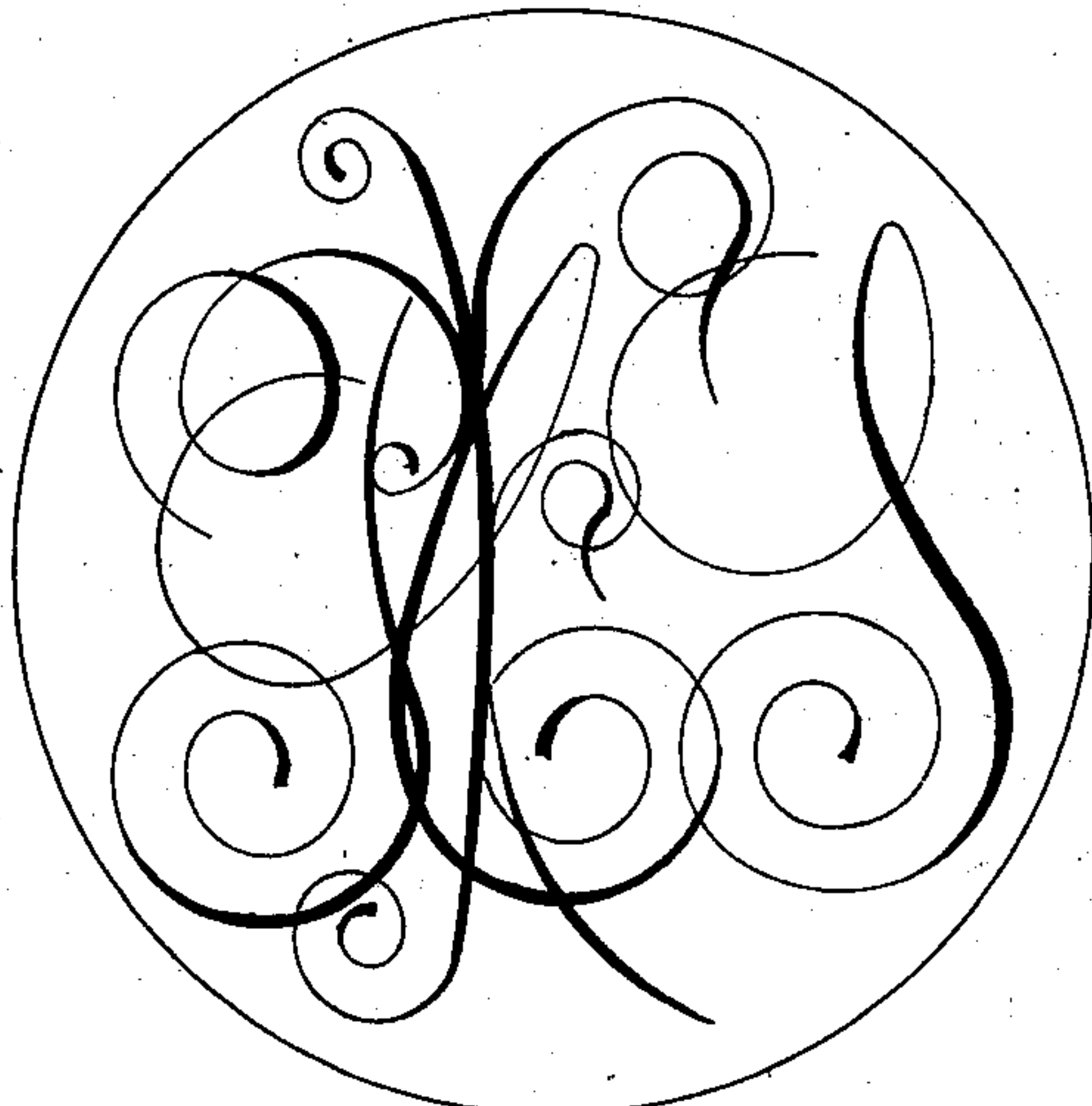
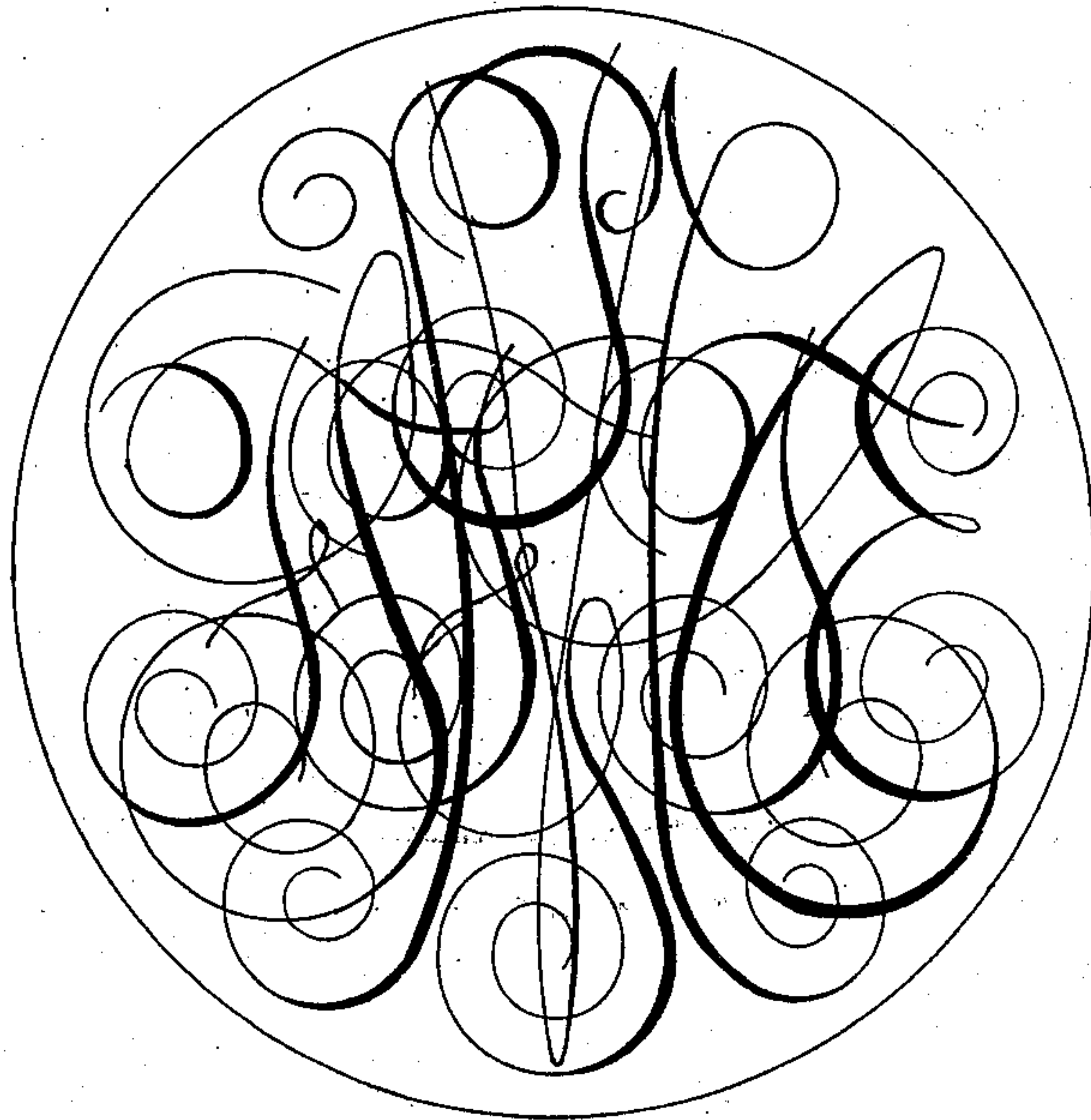


Fig. 7.



Witnesses:

Wm. E. Francis
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UNITED STATES PATENT OFFICE.

ALLAN E. FRANCIS, OF CLEVELAND, OHIO.

CIPHER-TYPE FOR ENGRAVING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 742,180, dated October 27, 1903.

Application filed January 29, 1903. Serial No. 141,079. (No model.)

To all whom it may concern:

Be it known that I, ALLAN E. FRANCIS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Cipher-Type for Engraving-Machines, of which the following is a specification.

My invention relates to improvements in the manner of forming ciphers or characters composed by entwining single-line letters of the alphabet with engraving-machines in which type or grooved pattern-letters are used to govern the movements of a tracer attached to a system of levers that reproduce the patterns on a reduced scale; and the object of my invention is to afford a practical way to so engrave composite characters from designs that have to be superimposed one upon another in their arrangement and where each component design when traced has to occupy the space or a part of the space occupied by another at the time of tracing. At the present time three ways are known by which this is imperfectly accomplished, the most satisfactory of which is to use the single-line regular engraving-machine metallic type by first tracing a pattern-letter and then by laying a type of the next letter to be traced over or partly over the one traced and by imagining as best the operator can how the lines in one letter will intermingle with those of the other. While the grooves in the type make this the best way to get fair results, metallic type is ill adapted to such work, and the results are seldom satisfactory. It is easier to imagine how the lines in one metallic type will interweave with those of another than it is to move an unguided tracer smoothly along the arbitrary course of the lines of a printed design when the tracer is carrying the load of a cutting-graver. Another way is to use transparent plates having letters printed upon them. Two or more of these are arranged one above the other. The design showing through the transparent medium gives to the eye the only means of guiding the tracer as it is pushed along over the smooth surface of the upper plate, while the graver is registering in its cut every deviation that a nervous hand makes in tracing the visible lines as seen through the plates. The result of this is so uncertain and the process so dangerous that

no cautious person would attempt it on anything of value. Still another way is that alluded to in my application for Letters Patent for improvement in monogram type for engraving-machines, filed February 4, 1902, Serial No. 92,595, in which the body of grooved type is cut away to give a necessary view of the arrangement of the letters; but this to be useful in single-line work attenuates the pattern-letters to a point where they lose their form by bending, making it as incomplete as the others. All of these plans are old and incomplete. None fully meet the requirements of machine cipher-engraving. Those having one essential lack another. The ones with grooves to direct the tracer cannot be accurately laid or do not hold their form, and the one that furnishes aid to the eye cannot be accurately traced.

The value of machine-cut ciphers depends on their symmetry. Proper intermingling of the lines must be reached by a knowledge of how the designs are laid, which can only be gained by seeing the composite figure before it is cut. When it is known to be correctly composed, a means must be afforded to carry the tracer over the design with evenness and precision to have the results satisfactory. I attain these objects by producing channeled or grooved designs on transparent plates, which I illustrate and show the manner of using in the accompanying drawings.

In the drawings I show representatives of three fonts of type which make up a tri-font system, and a tri-font system has been shown before. Therefore it is old. It is illustrated here to show the completeness of the advantages attained by the plan set forth. The only thing that is new is the channeled transparent plates.

In the drawings, Figure 1 is a large transparent plate upon which a letter of the largest font in this series is channeled. Fig. 2 is a medium-size transparent plate upon which a letter of another design and smaller has been channeled. Fig. 3 is a small transparent plate on which a smaller letter of the same design of that on Fig. 2 has been channeled. Fig. 4 shows two of the plates shown by Fig. 2 placed in position to show the first step in the use of these grooved transparent plates. Fig. 5 is the same as Fig. 4, having another

grooved transparent plate containing a letter from the same font superimposed upon the other to show the second step. Fig. 6 shows a cipher cut by this process enlarged
5 several diameters. Fig. 7 shows about the average size of circle within which ciphers cut from patterns shown would be contained when cut with the ordinary machine.

By this system of grooved transparent pattern-letters machine cipher-engraving has for
10 the first time arrived at a practical stage. In use these plates are attached to a soft-wood board by thumb-tacks, the board being secured to the type-table of the machine.

15 To produce a cipher like that shown in Fig. 6, the plates for "P" and "S" are tacked down, as shown in Fig. 4. Next the "C" is placed over these and adjusted so that the lines intermingle to suit. Then it is secured in place
20 by tacks, as shown in Fig. 5. Then the "F" (shown in Fig. 1) is laid and secured as the fancy dictates. Now with a pencil the position of "F" is noted by marks on the board showing where the margin comes. Then it is
25 removed. The same is observed in regard to

the "C," and it is removed. Then the "P" and "S" are cut and removed, and the "C" is placed in its proper place, as shown by the marks made for it, and it is cut and removed. The "F" is now laid by its marks and cut,
30 when the cipher will be found to be complete.

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

As a new article of manufacture the design-patterns for machine cipher-engraving, consisting of transparent celluloid or zylonite
35 sheets, each sheet having a letter, a figure or a character grooved or channeled on its surface; the grooves or channels being adapted to receive the point of an engraving-machine
40 tracer, by means of which the designs on different sheets are worked into a composite cipher.

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

ALLAN E. FRANCIS.

Witnesses:

M. C. FRANCIS,

JENNY L. FRANCIS.