No. 721,313. PATENTED FEB. 24, 1903.

P. C. LAWLESS.

PAPER CLIP.

APPLICATION FILED JUNE 3, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

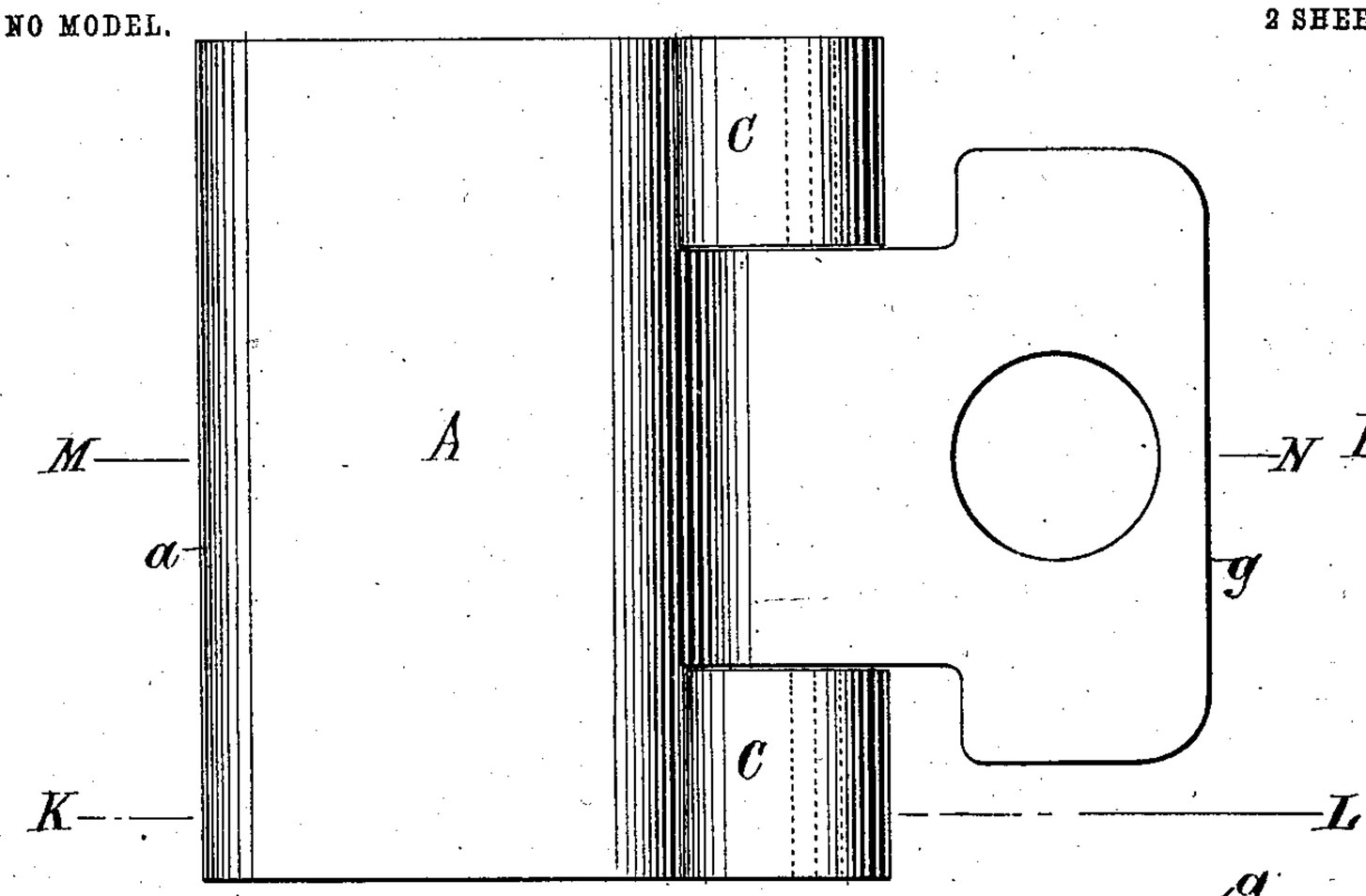


Fig. 1.

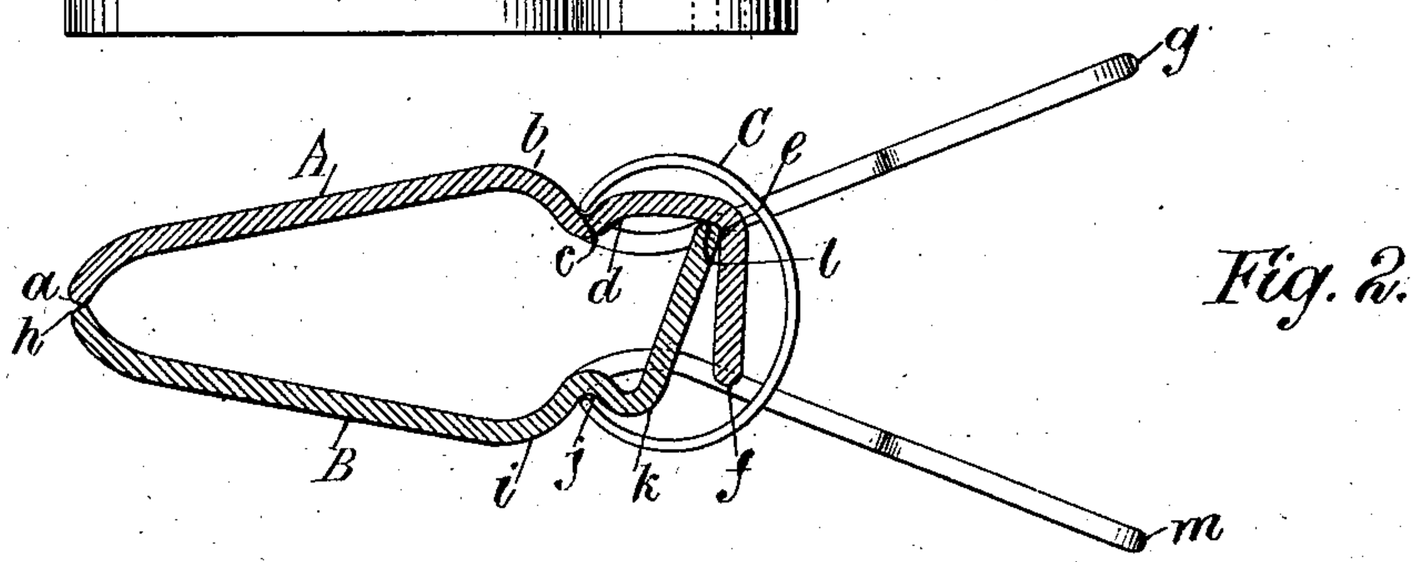


Fig. 2.

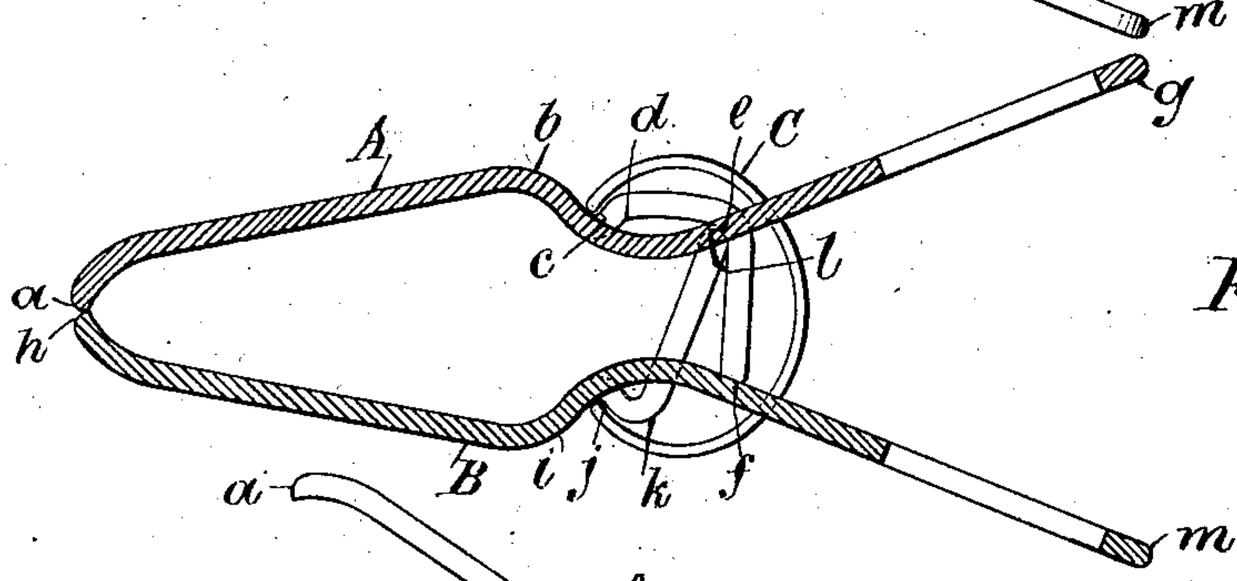


Fig. 3.

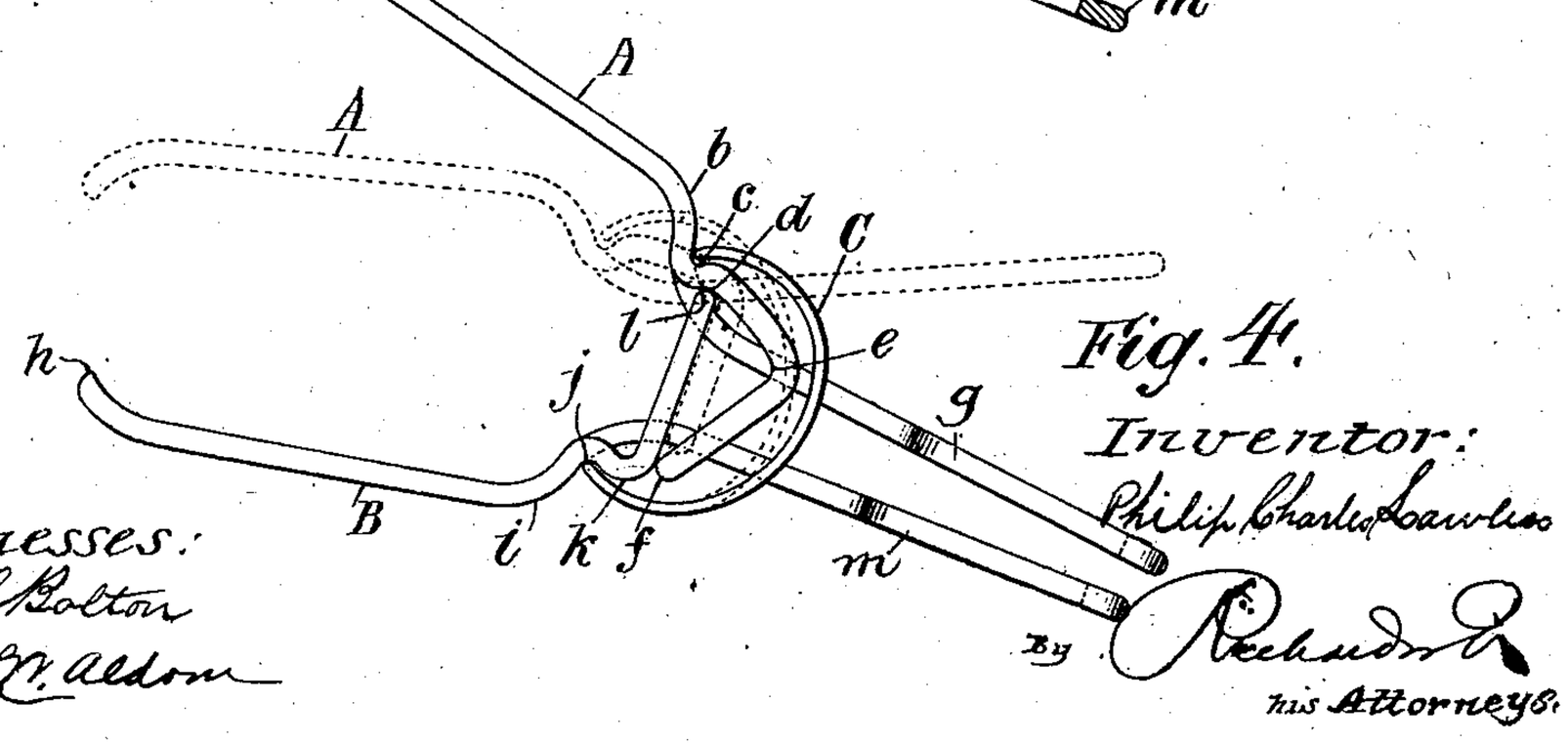


Fig. 4.

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NO MODEL. 2 SHEETS—SHEET 2.

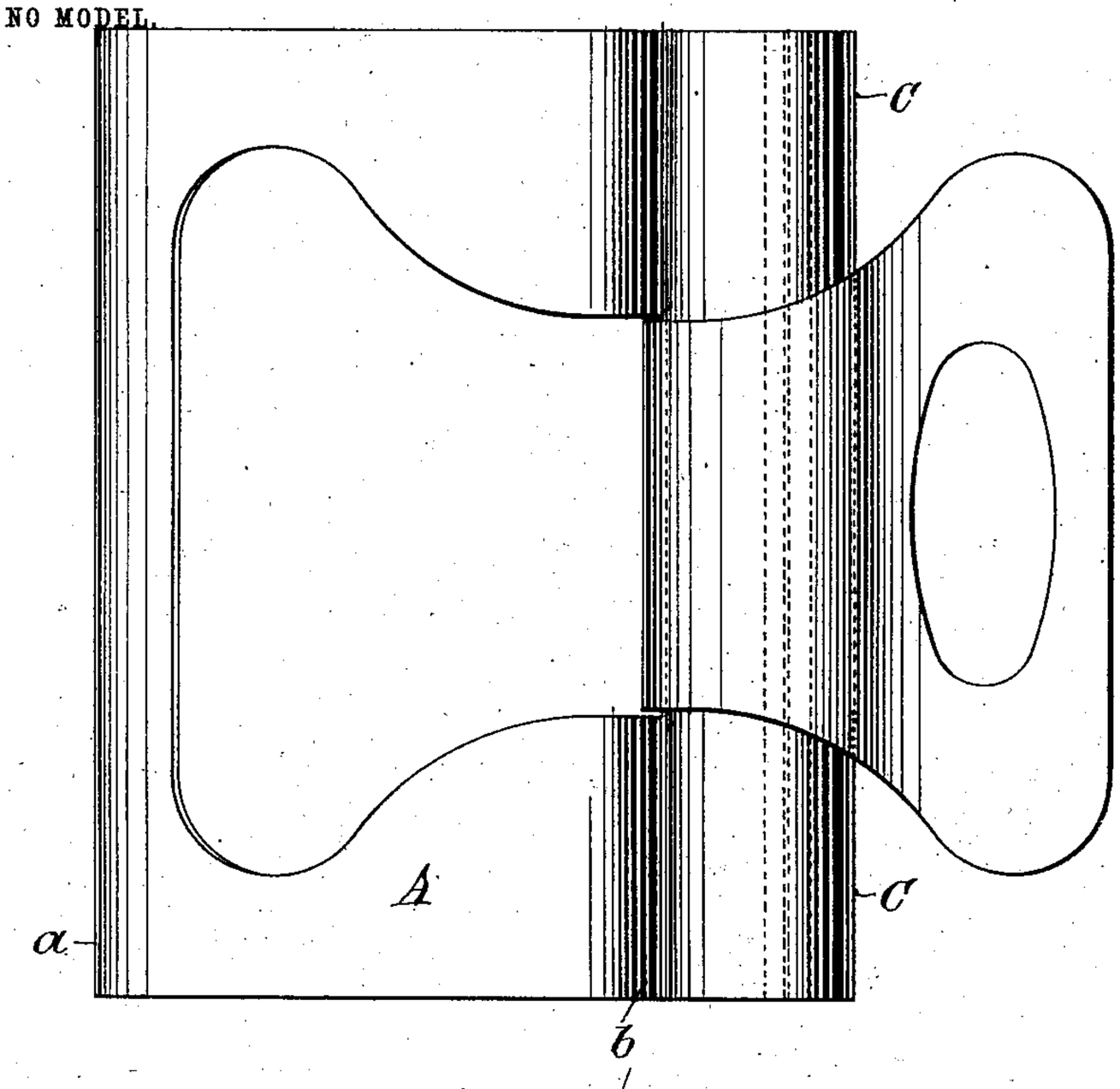


Fig. 6.

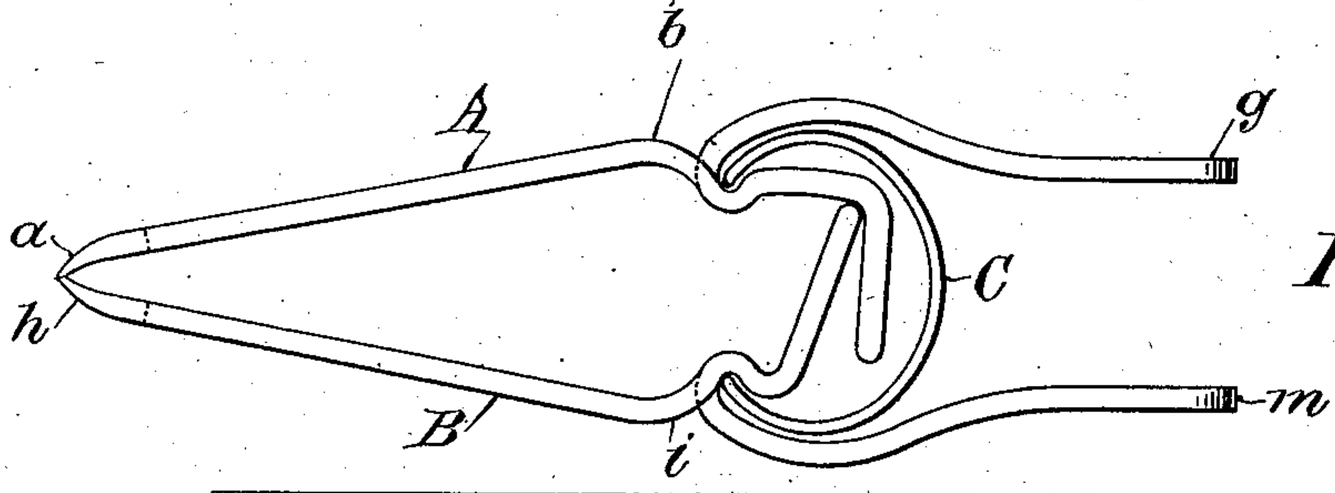


Fig. 7.

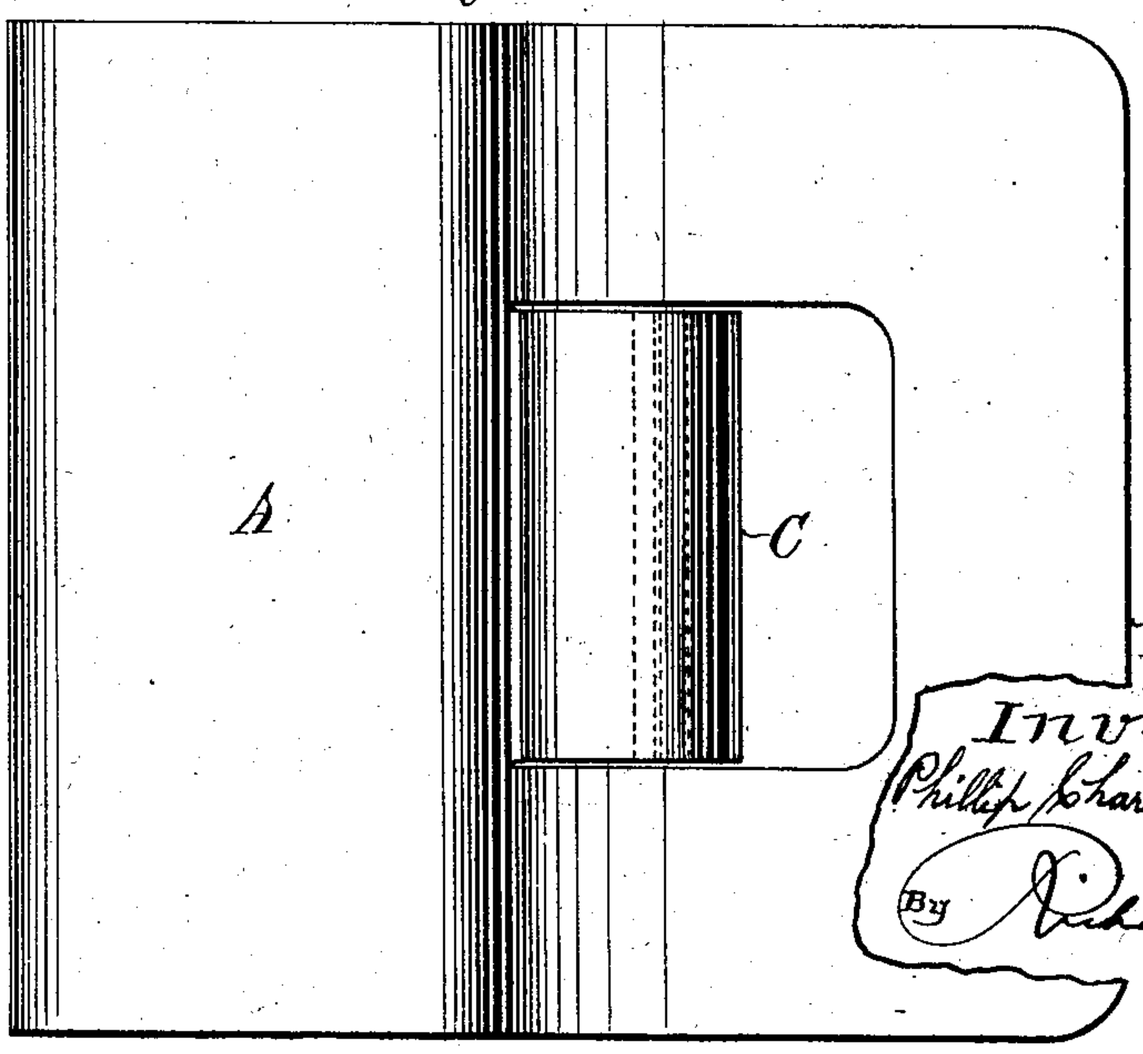


Fig. 5.

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# UNITED STATES PATENT OFFICE.

PHILIP CHARLES LAWLESS, OF LONDON, ENGLAND.

## PAPER-CLIP.

SPECIFICATION forming part of Letters Patent No. 721,313, dated February 24, 1903.

Application filed June 3, 1902. Serial No. 110,053. (No model.)

*To all whom it may concern:*

Be it known that I, PHILIP CHARLES LAWLESS, of No. 50 Parliament Hill, Hampstead, London, England, have invented certain new and useful Improvements in Paper-Clips; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a paper-clip which is so constructed that when it is in the entirely-closed or in the partially-extended position such as to correspond with the interposition of a normal number of sheets of paper the closing force is fairly considerable, yet when widely extended for the purpose of inserting additional sheets or extracting any which have been previously inserted the pressure requisite to retain it in that extended position is of less magnitude than that required to open the clip from the normally closed position. The effect is produced by so mounting the two halves of the clip on one another that the leverage of the force of a closing-spring becomes gradually reduced as the width of opening of the clip is enlarged from that of normal width to the extreme position.

Referring to the accompanying drawings, Figure 1 represents a plan of the clip. Fig. 2 is a section taken along the plane K L of Fig. 1 with the springs in elevation. Fig. 3 is a section taken along the plane M N of Fig. 1 with the springs in elevation; and Fig. 4 shows in elevation in dotted lines the clip partially open, but in a position in which the closing effort has undergone no reduction, and also shows in full lines the clip most widely extended with the leverage of the closing force considerably diminished. Figs. 5, 6, and 7 show slight modifications of the construction.

Figs. 1 to 4 show the clip composed of four pieces A B and C C. C C are two similar springs of **C**-shaped section, which serve to force together the two pieces A and B, between which are the sheets of paper to be clipped. The springs occupy the two outside portions of the width of the pieces A and B, the middle portions serving as handles, which on being squeezed together cause the clip to be opened and the papers released. The two outside portions of the width of A are bent to a shape represented by *a b c d e f*, the middle portion having a shape *a b c g*, and the two outside portions of the width of B have a shape represented by *h i j k l*, the middle portion having a shape *h i j m*. The extremities of the **C**-springs are inserted in the recesses *c* and *j*, so that they are not easily dislodged. In the closed or in the normal position the edge *l* of the piece B reposes in the corner *e* of the piece A, which forms the fulcrum about which the piece B turns on the commencement of the opening of the clips. When the two parts of the clip have been extended to the distance shown in dotted lines in Fig. 4, the portion *e f* of A is in contact with *l k* of B. The effect of any further extension of the clip is to cause the edge *l* of B to travel along the surface *e d* of A toward the recess *c* by the pressure of the edge *f* of A against the surface *k l* of B. In this way the fulcrum about which the two pieces A and B tend to turn under the action of the **C**-springs is the temporary position of the edge *l* of the piece B. As this position gradually approaches the recess *c*, into which the extremity of the spring is inserted, the leverage of the force of the spring is correspondingly diminished and the effort requisite to maintain the clip wide open becomes greatly reduced.

By forming a corner *d* in the piece A an abutment *d c* is provided, which prevents further movement of the edge *l* and avoids a disunion of the two pieces A B, which otherwise might occur; also, by bending the portion *c g* out of coincidence with *d e* the separation of the two pieces by end displacement will be prevented. The same principle of action may be embodied in a modified construction, as represented in Fig. 5, which shows a single **C**-spring occupying the middle portion of the width of the pieces A B as an alternative to using two **C**-springs on the outer portions of the width.

A further alternative in the form of the handle and the fitting of the **C**-spring is shown in Figs. 6 and 7, in which the **C**-spring occupies the whole width of the pieces A B, the handles being formed out of a portion of *a b* of A and of *h i* of B, such portions being

bent backward around the single C-spring, as shown in Fig. 7.

I claim—

1. A paper-clip composed of two portions A and B which are adapted to pivot one on the other about a displaceable fulcrum and springs C which are adapted to force together the two portions A and B, the fulcrum consisting of an edge of B and a portion of the surface of A, a projection of A being adapted to thrust the fulcrum edge of B toward the line of action of the closing force of the springs C and diminish their leverage when the opening of the clips is extended beyond the normal position for clipping papers, substantially as described.

2. A paper-clip composed of two portions A and B which are adapted to pivot one on the other about a displaceable fulcrum and springs C which are adapted to force together the two portions A and B at points situated between the fulcrum and the clipping ends thereof, each portion A and B having a handle which extends on the side of the fulcrum away from the clipping ends, the fulcrum consisting of an edge of B and a portion of the surface of A, a projection of A being adapted to thrust the fulcrum edge of B toward the line of action of the closing force of the springs C and diminish their leverage when the opening of the clips is extended beyond the normal position for clipping papers, substantially as described.

3. A paper-clip composed of two portions A and B which are adapted to pivot one on the other about a displaceable fulcrum and springs C which are adapted to force together the two portions A and B at points situated between the fulcrum and the clipping ends thereof, each portion A and B having a handle which extends on the side of the fulcrum away from the clipping ends, the fulcrum consisting of an edge of a portion of the surface of B, which is bent nearly transversely to the middle plane between A and B, and a portion of the surface of A, nearly parallel to that middle plane which portion of surface is, on the one hand, terminated by an abrupt bend near the point of application of the springs C and, on the other hand, by an abrupt bend in a direction nearly transverse to the middle plane between A and B, the two nearly transverse portions of A and B including a wedge-shaped space which, on the opening of the clips, first reduces to zero and then opens out again with the wedge inverted, substantially as described.

4. A paper-clip composed of two portions A and B which are adapted to pivot one on the other about a fulcrum and springs C which are adapted to force together the two portions A and B, the fulcrum consisting of an edge of B and a portion of the surface of A, the line of action of the spring-pressure on the two portions A B and the fulcrum being adapted to approach one another closely when the clip is widely extended.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

PHILIP CHARLES LAWLESS.

Witnesses:
ROBT. A. BLAKE,
WALTER J. SKERTEN.