

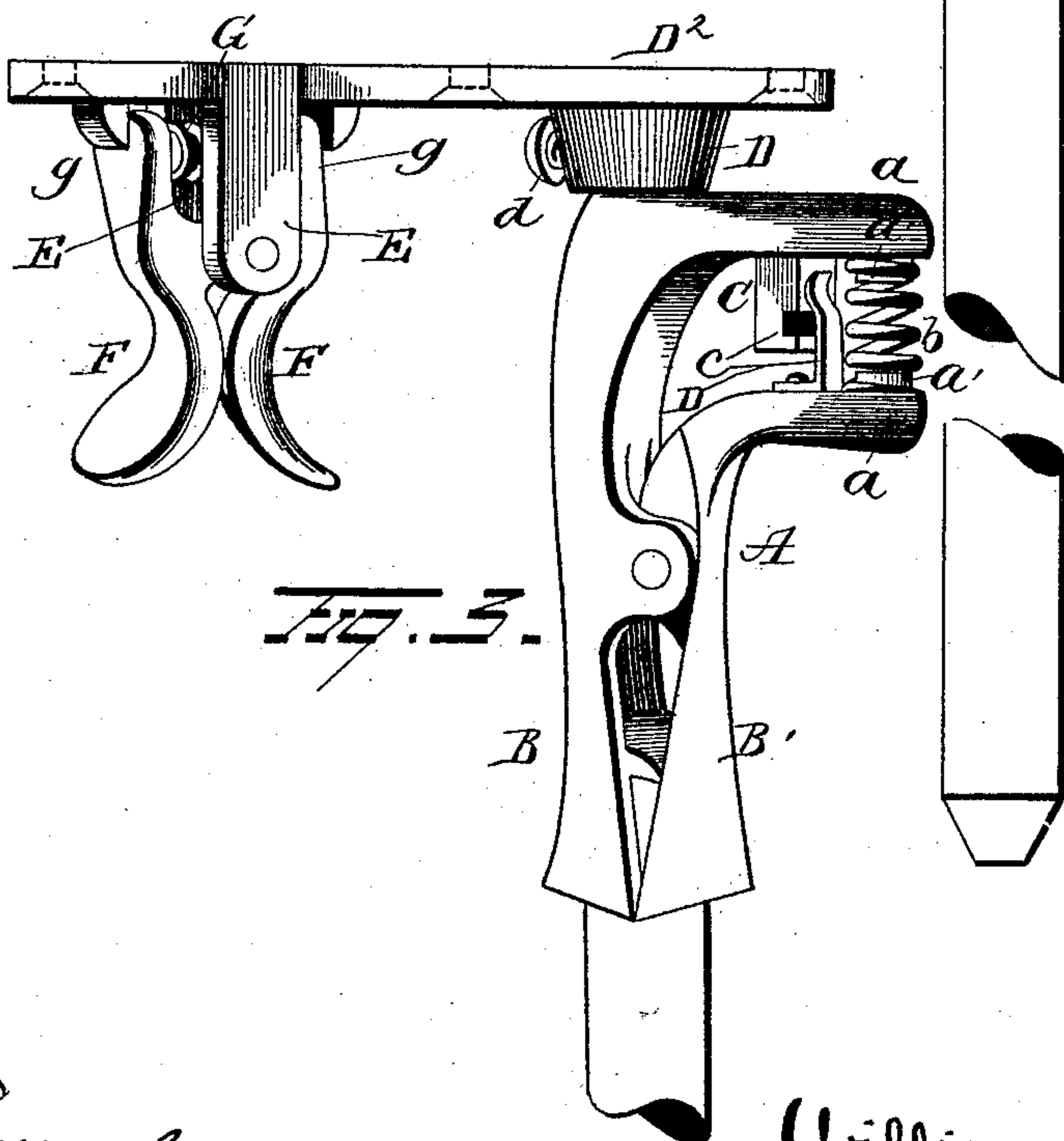
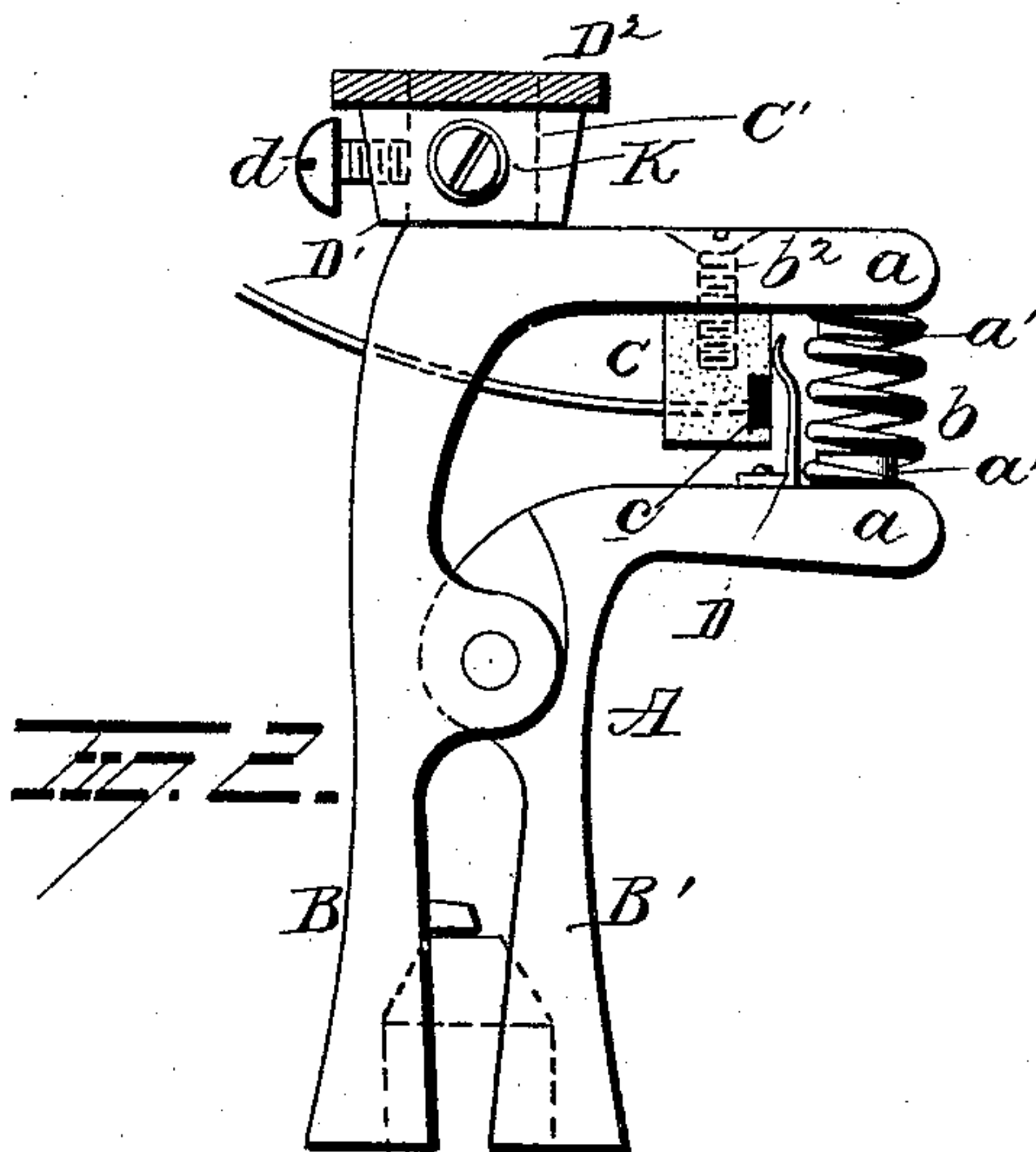
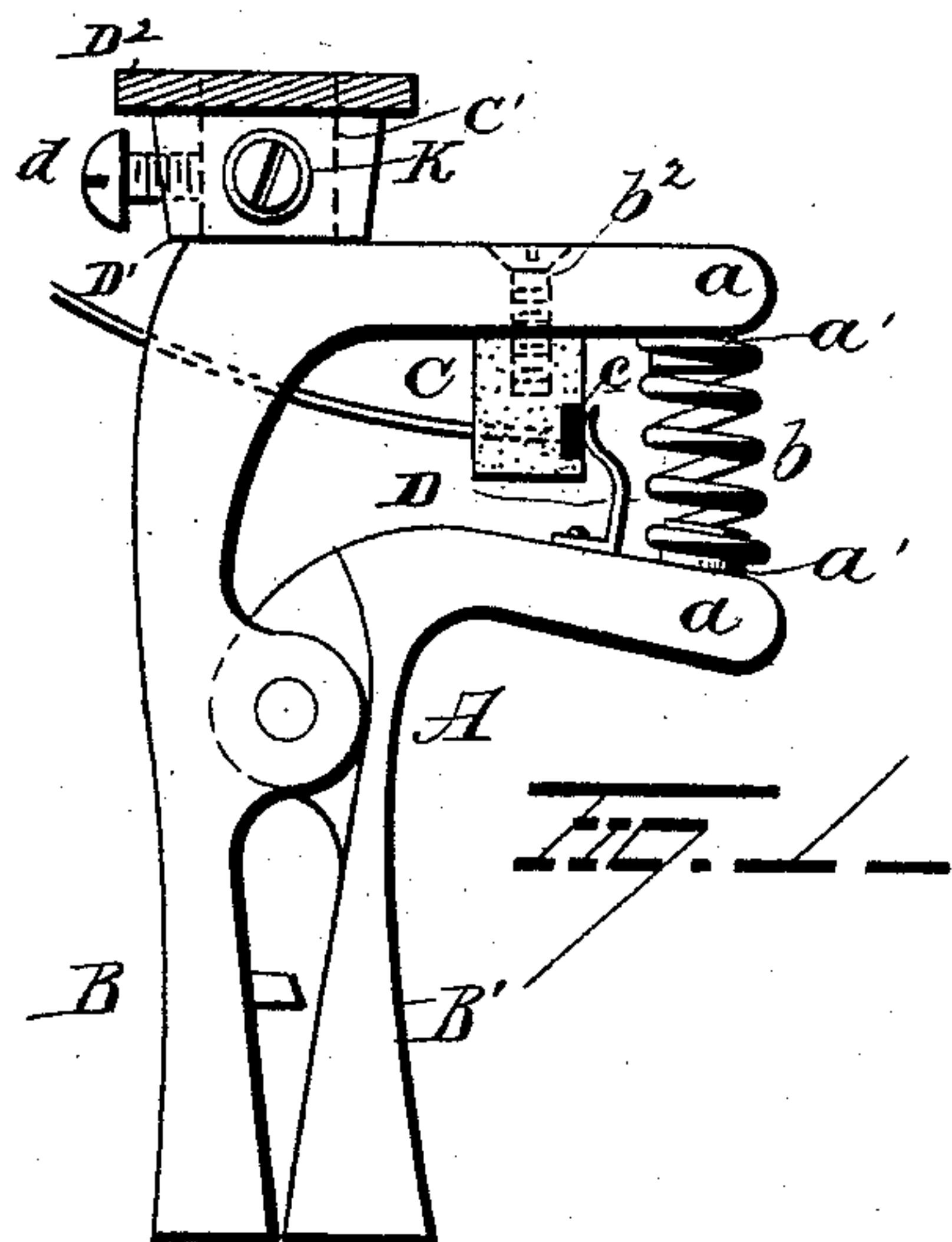
(No Model.)

2 Sheets—Sheet 1.

W. J. POSSONS.
APPARATUS FOR ELECTROPLATING.

No. 441,892.

Patented Dec. 2, 1890.



Witnesses
E. J. Nottingham
S. G. Nottingham

Inventor
William J. Possons
By his Attorney
H. A. Sumner

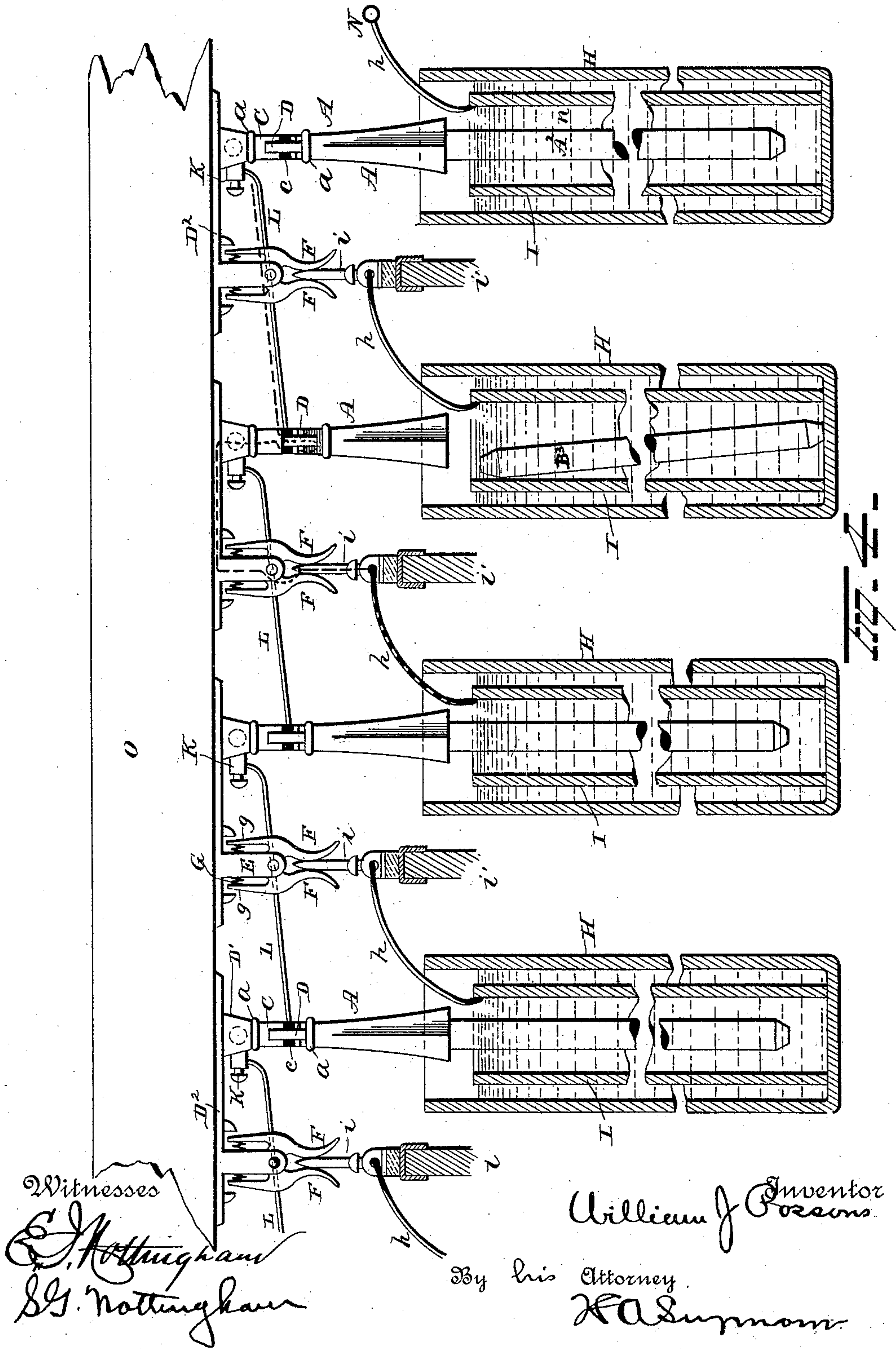
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

WILLIAM J. POSSONS, OF CLEVELAND, OHIO, ASSIGNOR TO THE BRUSH
ELECTRIC COMPANY, OF SAME PLACE.

APPARATUS FOR ELECTROPLATING.

SPECIFICATION forming part of Letters Patent No. 441,892, dated December 2, 1890.

Application filed October 18, 1889. Serial No. 327,411. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. POSSONS, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Apparatus for Electroplating; 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.

My invention relates to an improvement in devices for electroplating, the object being to provide a plating apparatus with devices whereby the current used for electroplating will be shunted around an empty clamp (one or more) and the circuit through the filled clamps be maintained intact.

With this end in view the invention consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation of my improved clamp when empty. Fig. 2 is a similar view of the clamp after a carbon to be electroplated has been inserted therein. Fig. 3 is a view in perspective of the combined clamps, base-plate, and contact; and Fig. 4 is a view, partly in section and partly in side elevation, of a section of a plating apparatus provided with my improvement.

A represents a clamp, consisting of a fixed jaw B and pivoted jaw B', each being constructed with a laterally-projecting arm *a*, between which is interposed a spiral spring *b*, the latter being held in place by means of the lugs *a'* on the arms *a*. The spiral spring operates to force the arms *a* apart, and thus close the jaws B B'. To the arm *a* of jaw B is secured, by a screw *b*², a block C, of hard rubber or other good electrical insulating material. In one surface of the insulating-block is inserted a metal contact *c*, which is a good electrical conductor. To the arm *a* of the movable jaw B' is fastened a yielding contact D, which is of such form and construction that when the jaws B B' are empty and closed it will bear upon and form a contact with the contact *c*, as illustrated in Fig. 1; but when the jaws B B' are filled by the in-

sertion therein of a carbon or other article to be plated the yielding contact will be moved away from contact *c* and rest upon the block C of insulating material, as shown in Fig. 2.

Clamp A is provided at its upper end with a stud C', which fits within a socket D', formed on the base-plate D², and is detachably and adjustably secured therein by a set-screw *d*. Base-plate D² is constructed with two depending lugs E, between which are pivoted the contact-jaws F F. The lower ends of the jaws F F are forced into engagement by means of a spiral spring G inserted between their upwardly-projecting arms *g g*.

In Fig. 4 I have represented four plating-jars H arranged in a row. While this is a sufficient number for the purpose of explaining the invention, I may state that in practice a number of rows of jars, each row consisting of any desired number of jars, are arranged in a single tank, and all of the jars are connected in series in an electric circuit, so that the jars are traversed successively by the current. Each one of the jars H has a cylindrical copper anode I inserted therein. Each anode I is connected by a conductor *h* with a contact *i*, fastened and insulated from the upper edge of a partition *i'*, located between every adjacent jar.

Clamps A are electrically connected in the following manner: The clamp at one end of the series is provided with a binding-post K, to which is fastened one end of a conductor L, the opposite end of which is electrically connected with the contact *c*. This same clamp A is electrically connected by a conductor L with the contact *c* of the next succeeding clamp.

Having described the construction of parts, I will now briefly explain the operation and advantages of my improvement.

The clamp-bar O, with a series of electric-light carbons or other articles to be plated suspended therefrom, on being lowered operates to simultaneously lower each carbon into its plating-jar, the parts being so arranged that each carbon will be located centrally, or practically so, within its cylindrical copper anode. Current enters from the binding-post N, flowing through the conductor

h to the anode I, and from thence through the bath n to the carbon A², and from thence to the clamp A, base-plate D², contact-jaws F F, stationary contact i, and through the conductor h, leading to the next succeeding jar. In this way the current traverses the jars in succession, the carbons constituting part of the circuit.

In electroplating electric-light carbons by my improved process and apparatus, which form the subject-matter of separate applications for patents, filed October 17, 1889, Serial No. 327,294, any desired number of clamp-bars O are employed. For instance, twenty clamp-bars (more or less) may be used in a single apparatus. These clamp-bars are detachably mounted on a frame so constructed that it may be rolled onto the vertically-adjustable frame of a charging apparatus, and after the clamps have been automatically and simultaneously charged or filled with carbons the frame supporting the clamp-bars is rolled or moved over onto the vertically-adjustable frame of the plating apparatus, and which frame on being lowered causes all of the carbons to be simultaneously inserted in their plating-jars. Each clamp-bar O has attached thereto any desired number of clamps. For instance, thirty clamps (more or less) may be attached to each clamp-bar. Assuming that the maximum number of clamp-bars and clamps above specified are employed in a single apparatus, it will be seen that the latter will have a capacity for electroplating six hundred carbons simultaneously. Unless some provision were made for short-circuiting an empty clamp much trouble and annoyance would result, because in automatically filling the clamps it not infrequently happens that one or more of them will fail to receive or grasp a carbon, and in the absence of any short-circuiting device it would be necessary for the workman to manually charge such empty clamps before or after lowering the carbons into their plating-jars, because if this were not done the circuit would be broken at the empty clamp or clamps, and hence no current could flow through the plating apparatus; but considerable delay and consequent expense would be involved in manually charging one or more of the empty clamps, as they could only be discovered after a careful examination, and when discovered might not be accessible, excepting special provision were made in the construction and adjustment of the supporting-frames. By my improvement all such trouble and expense is obviated, because if one or more clamps fail to be charged, or should one or more of the carbons become accidentally detached from their clamps while being lowered, or after they have lowered into the jaws, such empty clamps will be short-circuited and the current will continue to flow through the remaining carbons of the series. When the clamp is empty, a closed circuit is formed around it, the current flow-

ing through the conductor L, fixed contact c, yielding contact D, clamping-jaws A, base-plate D², and from the latter through the contact-jaws F F, stationary contact i, and conductor h to the anode of the next succeeding jar. When a carbon is inserted in the clamp, the movable jaw is actuated and the yielding contact D is thrown out of engagement with the contact c, thereby opening the short circuit and causing the current to flow from the base-plate D² and through the contact-jaws F F, stationary contact i, conductor h to the anode, and through the bath in the jaw to the carbon, and from thence through the clamp, and by a similar path to the next succeeding carbon.

In Fig. 4 I have represented the carbon B³ as being detached from its clamp, and hence this jar will be short-circuited in the manner hereinbefore described and the current caused to traverse all the remaining jars of the series. Hence by the employment of my improvement any number of clamps may be simultaneously charged or filled with carbons and the latter lowered into jars and plated in series without stopping to examine the clamps or to manually charge the empty ones, as the circuit will be maintained intact whether all or only a portion of the clamps are filled.

I do not restrict my improvement to the plating of electric-light carbons, as it may be used in plating other articles; nor do I limit the invention to the particular construction and arrangement of parts shown and described, as it is evident they might be varied in many particulars without departing from the invention.

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

1. A clamp for electroplating, provided with contacts for opening and closing an electric circuit, substantially as set forth.

2. The combination, with the jaws of a clamp for electroplating, of two electrical contacts and a spring for moving the contacts into engagement, substantially as set forth.

3. The combination, with the jaws of a clamp for electroplating, of two electrical contacts constructed and arranged to be separated when the jaws are separated for the insertion of the article to be clamped and plated, substantially as set forth.

4. The combination, with a number of clamps, each provided with electrical contacts adapted to be separated when the clamps are filled or charged, of electrical conductors for connecting the clamps in series, substantially as set forth.

5. The combination, with two or more plating-jars and anodes and a contact electrically connected with each anode, of a series of clamps for holding the article to be electroplated, each clamp being provided with electrical contacts adapted to be operated and closed by the movement of the clamp-jaws, and conductors located between the clamps

electrically connecting the clamps and contacts, substantially as set forth.

6. The combination, with a bar having a series of clamps and contacts connected therewith, of devices constructed to short-circuit the unfilled clamp or clamps of the series, substantially as set forth.

7. In an electroplating apparatus, the combination of a series of plating-jars and a series of contacts electrically connected with the anodes in the plating-jars, of a series of clamps electrically connected with each other when the clamps are empty, contacts adapted

to be separated in the filling of the clamps, and conductors and separate contacts whereby the articles to be plated will be connected in series and the empty clamps will be shunted from the circuit, substantially as set forth.

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

WILLIAM J. POSSONS.

Witnesses:

L. W. BRADLEY,
W. F. SAYLE.