

No. 725,220.

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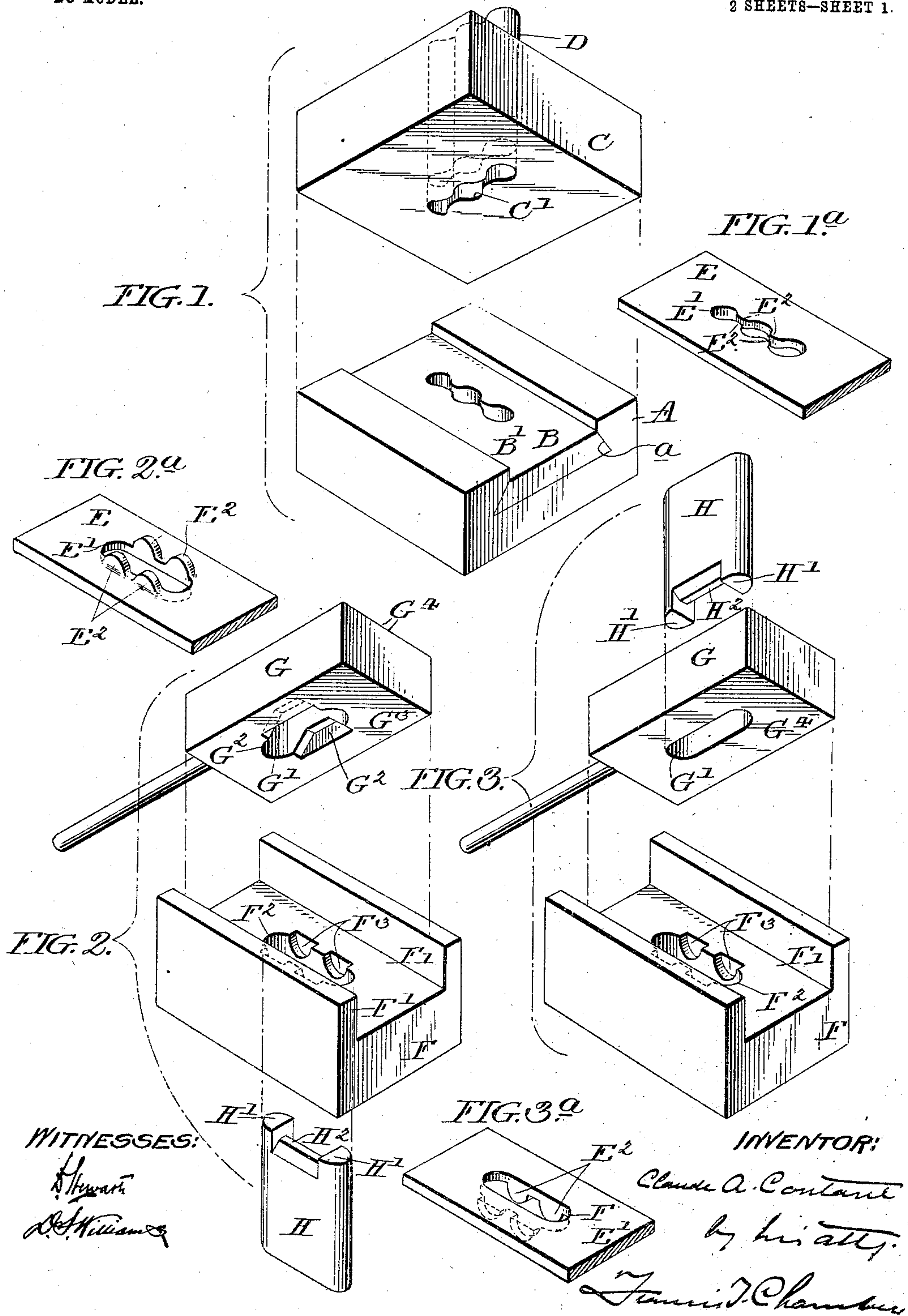
C. A. CONTANT.

METHOD OF FORMING GIB SEATS ON SPRING LEAVES.

APPLICATION FILED MAR. 11, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

FIG. 4.

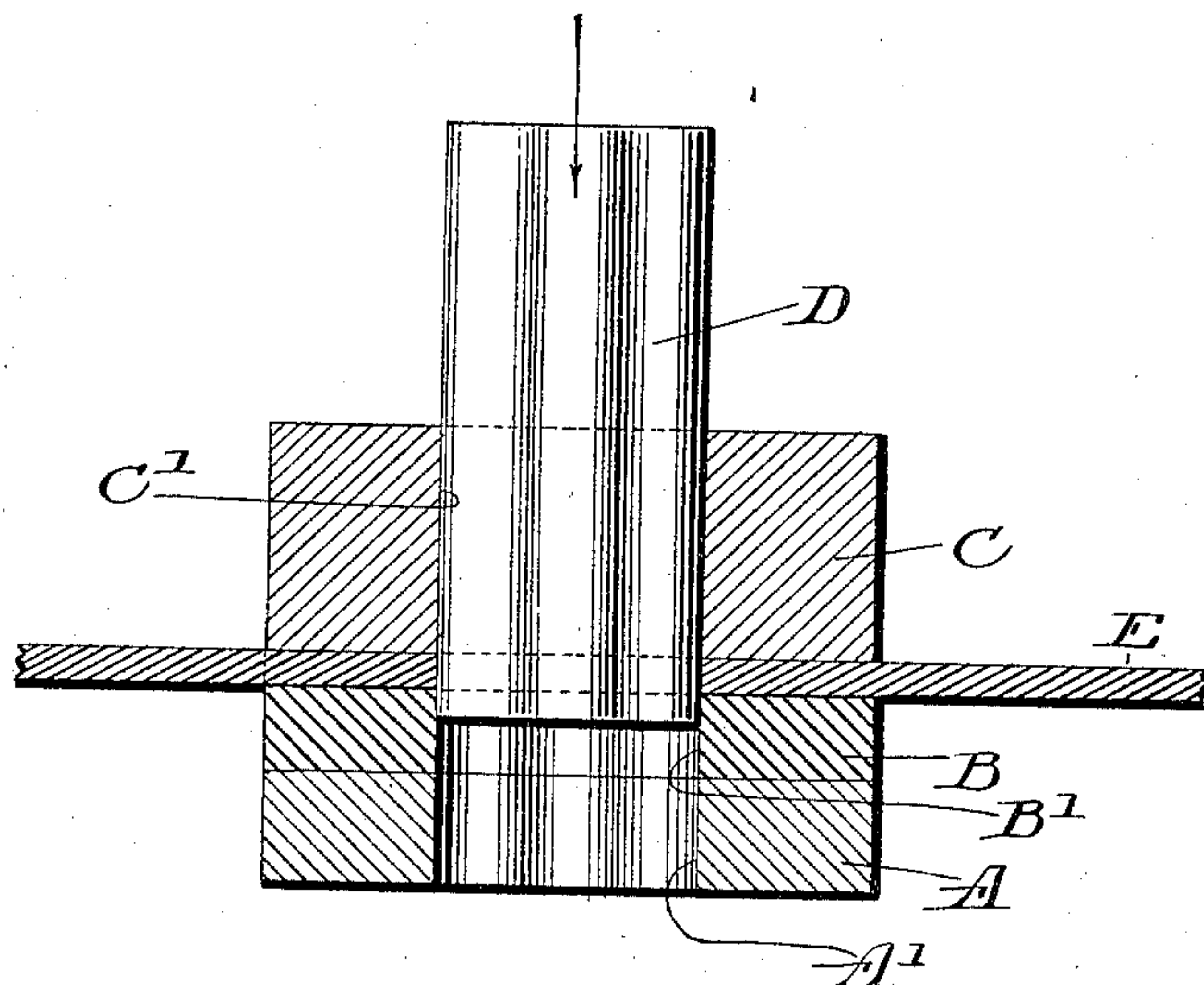


FIG. 5.

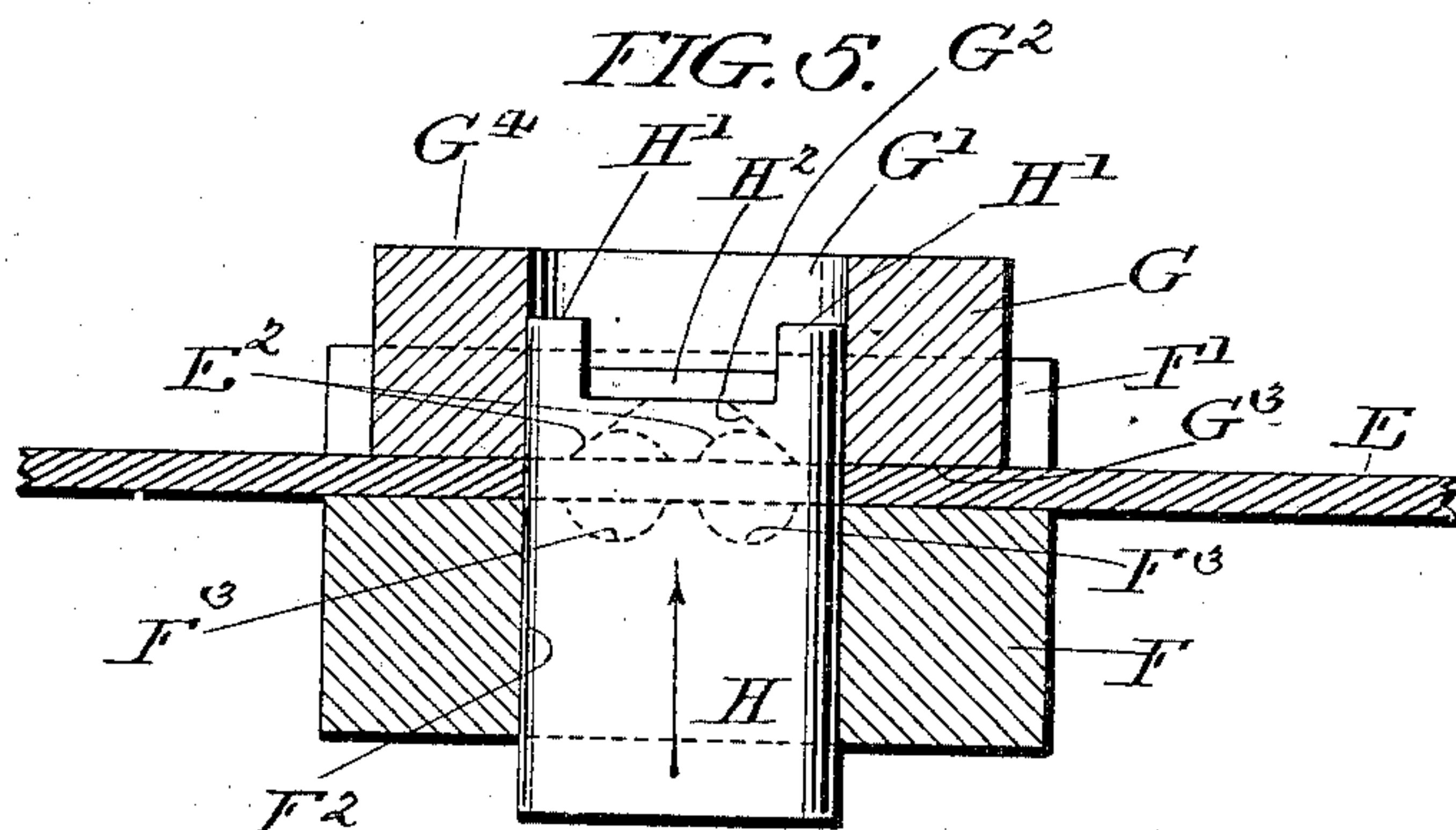
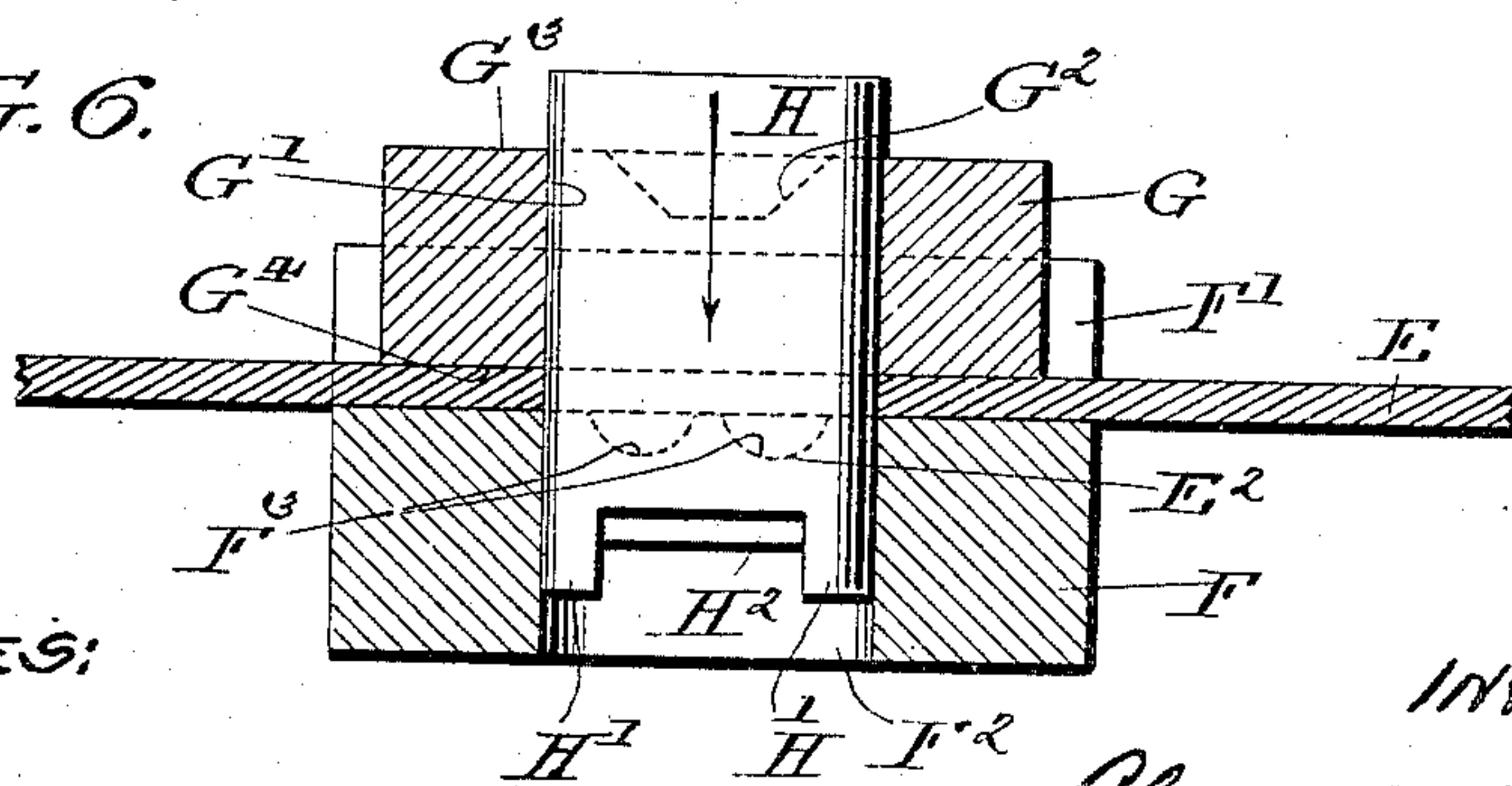


FIG. 6.



WITNESSES:

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UNITED STATES PATENT OFFICE.

CLAUDE A. CONTANT, OF FORT WAYNE, INDIANA.

METHOD OF FORMING GIB-SEATS ON SPRING-LEAVES.

SPECIFICATION forming part of Letters Patent No. 725,220, dated April 14, 1903.

Application filed March 11, 1902. Serial No. 97,704. (No model.)

To all whom it may concern:

Be it known that I, CLAUDE A. CONTANT, a citizen of the United States of America, residing in Fort Wayne, in the county of Allen, State of Indiana, have invented a certain new and useful Improvement in Methods of Forming Gib-Seats on Spring-Leaves, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to the manufacture of spring-leaves, especially such as are adapted for use in half-elliptic springs and in which a gib-seat is formed integral with the top leaf; and my invention has for its object the formation of such gib-seats by a process at once simple, expeditious, and of a character to produce the best and most accurate results.

My invention consists in a manipulative method of forming gib-seats, which will be best understood as explained in connection with the drawings, in which it is illustrated, the said drawings showing apparatus suitable for use in carrying my process into operation and illustrating also the mode of use of such apparatus in accordance with my method.

In the said drawings, Figure 1 shows in perspective the upper and lower dies and the punch by which the first or cutting operation of my process is effected. Fig. 1^a is a perspective view of a section of the spring-leaf in which the gib is to be formed cut out in accordance with the preliminary or first step of my method. Fig. 2 shows in perspective the dies and bending-punch used in connection with the second step of my method, Fig. 2^a showing the spring-leaf section after it has been subjected to the said second step in the process of forming the gib-seat. Fig. 3 is a perspective view showing the dies and bending-punch used in effecting the third step of my method, Fig. 3^a showing the completed gib-seat after it has been subjected to the said third step. Fig. 4 is an elevation showing the dies and punch of Fig. 2 in the operation of cutting out the spring-leaf in the manner indicated in Fig. 1^a. Fig. 5 is a similar view of the dies and bending-punch shown in Fig. 2 in the operation of bending outward the lugs or tongues of the gib-seat. Fig. 6 is

a similar view of the dies and punch of Fig. 3 assembled as they are used in effecting the third step of the process and perfecting the gib-seat, as shown in Fig. 3^a.

My method then consists in subjecting the spring-leaf, which I have lettered E in the drawings, to the three operations, the effects of which are shown in Figs. 1^a, 2^a, and 3^a, the first operation consisting in punching in the spring-leaf a hole of the general character indicated at E' in Fig. 1^a, the hole or perforation in the leaf being characterized by having inwardly-extending lugs or tongues, such as are indicated at E². The second operation of my method consists in bending these tongues outward until they stand substantially perpendicular to the face of the spring-leaf, as indicated at E² in Fig. 2^a, and the third operation consists in subjecting the perforation and lugs to a forging process in dies, so as to give the proper and accurate size to the hole or perforation and the lugs formed, as above described, above its edge.

A indicates the lower punch-die, which I prefer to form with a seat, such as is indicated at a, to receive and hold in proper alignment the die-bottom (indicated at B) and having formed in it the perforation B' of the same contour as the perforation which it is desired to form in the spring-leaf.

C is the upper punch-die, between which and the upper walls of the die A the spring-leaf E is clamped, said die being formed with a perforation C', adapted to guide the punch and having, as shown, the outline of the punch, though obviously this is not essential.

D is the punch, having the contour of the perforation to be formed in the leaf and of the perforation in the die-base B, so that in coaction with the die-base it will cut out the leaf in the manner indicated in Fig. 1^a.

F, Figs. 2, 3, 5, and 6, is the lower die, used in the second and third steps of my method as actually practiced by me, though it will be obvious that this special die is designed for the third step of the method and that a somewhat-different die could be used in the second step, if desired. This die is formed with upwardly-projecting ridges F' to assist in holding the upper die in correct alinement. It has also formed in it a perforation F², having substantially the contour of the punch H,

to be hereinafter described, and at the top of the die it is also formed with recesses F^3 , having the shape and contour of the upwardly-projecting lugs to be formed in the spring-leaf.

G is the upper die, which, as shown, is used for both the second and third operations in the formation of the gib-seat, the said die having two faces G^3 and G^4 , the first of which is used in the second operation and the second of which in the third operation. The die is formed with a perforation G' , extending through from face to face and having the contour of the punch H . On its face G it is formed with recesses G^2 , extending in from the edge of face G^3 and from the side walls of the perforation G' , as indicated. The shape and size of the recesses G^2 are such as to enable the lugs E^2 , formed in the edge of the perforation E' , to be bent up into the side recesses G^2 without coming in contact with the side walls of the perforation G' .

H is the bending-punch, the body of which has the contour of the perforation to be ultimately formed in the leaf E . The end of the punch H is formed with extensions H' , which preserve the contour of the lateral edges of the punch and are adapted to fit into the rounded ends of the perforation E' . Between these upwardly-extending ends H' and at a somewhat-lower level is formed a wedge-shaped center H^2 .

In operation the spring-leaf E is placed between the dies F and G and in contact with the face G^3 of the die G , with its perforation E registering with the perforations F^2 and G' . The bending-punch H is introduced through the die F and driven up into the die G , the wedge H^2 acting against the inwardly-extending lugs E^2 and bending them up into the recesses G^2 , while the ends of the perforation in the leaf are held in proper position and prevented from becoming distorted, first,

by the projecting ends H' of the punch and then by the lower body of the punch, the result of this manipulation being approximately indicated in Fig. 2^a. The spring-leaf is then reversed and placed in the die F , with its lugs E^2 inserted in the recesses F^3 . The die G is also reversed and placed upon the spring-leaf with its plain face G^4 in contact therewith, and the punch H is then inserted through the die G and driven down through the leaf into the die G , with the effect of forcing the lugs E^2 into the die-cavities F^3 , formed to receive them, and the leaf is then subjected to the necessary pressure, either by pressing mechanism or by blows on the upper die, to upset the metal and cause the perforation and its lugs to conform themselves to the various contacting surfaces of the dies and the punch, which in this operation acts as a die member, the result being the formation of the gib-seat with great accuracy and perfection of outline, as indicated in Fig. 3^a.

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

The method of forming gib-seats on spring-leaves, which consists in punching a hole E' through the leaf, so as to have inwardly-extending tongues E^2 , then bending said tongues E^2 , outward to a position in which they extend substantially at right angles to the face of the leaf, and then forging the seat portion of the leaf in dies having the form of the gib-seat, by successive operations, the first operating to press the tongues E^2 , outward into the die-cavities formed to receive them, and the second, to upset the metal and give the desired final conformation to the gib-seat.

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Witnesses:

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