J. D. LORD.

MECHANISM FOR APPLYING BOTTLE CAPS.

APPLICATION FILED AUG. 5, 1908.

983,829.

Patented Feb. 7, 1911

2 SHEETS—SHEET 1.

Fig. 1.

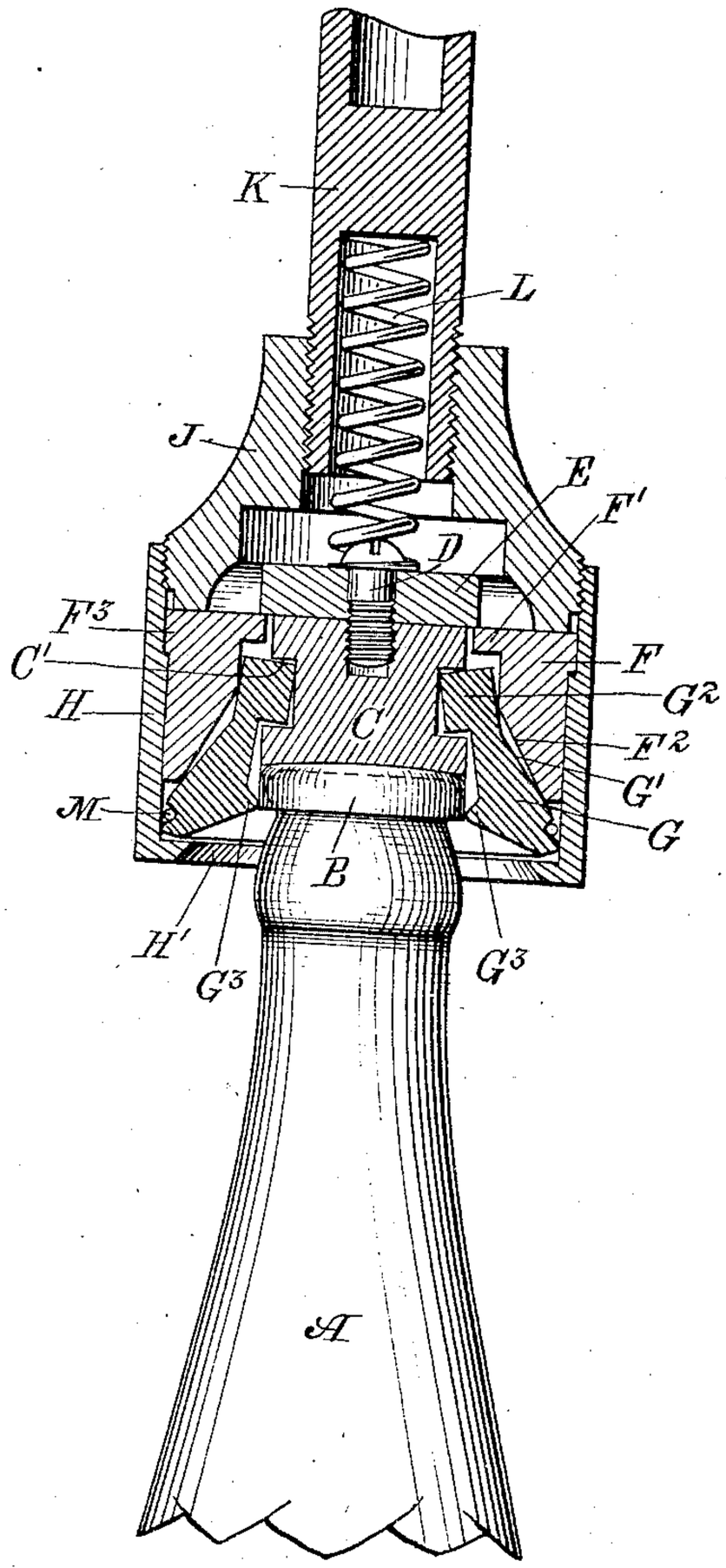
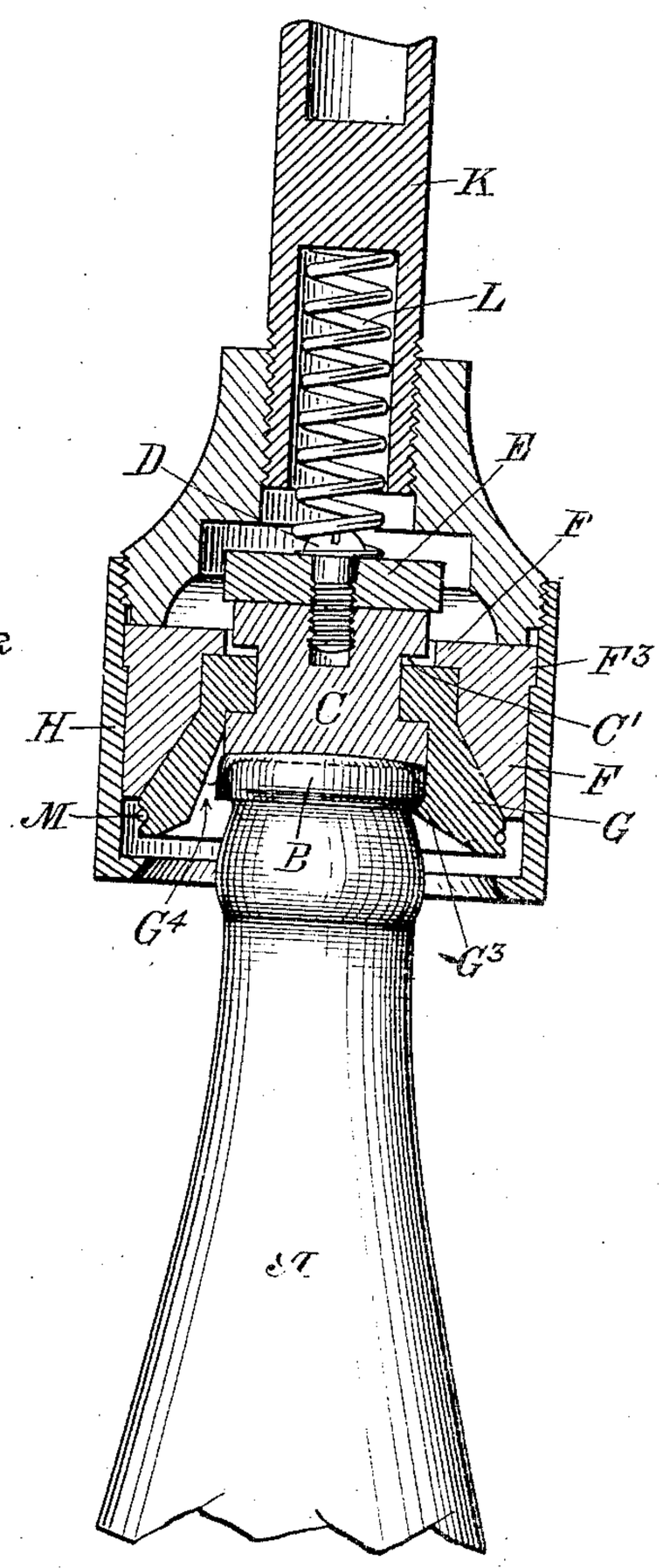


Fig. 2.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 3.

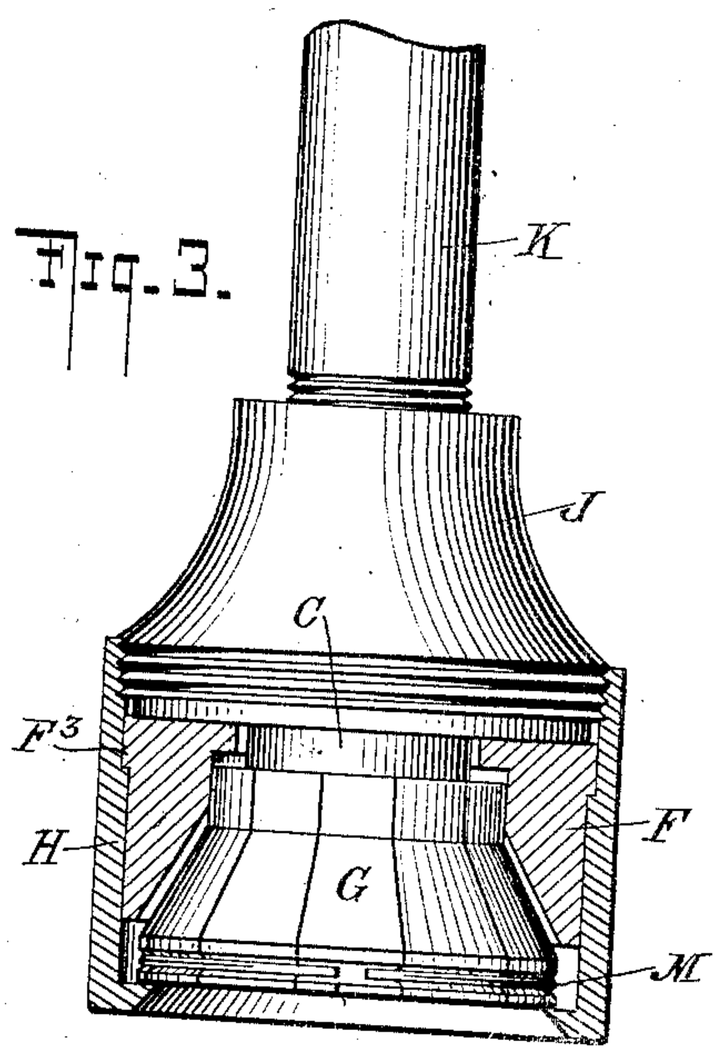


Fig. 4.

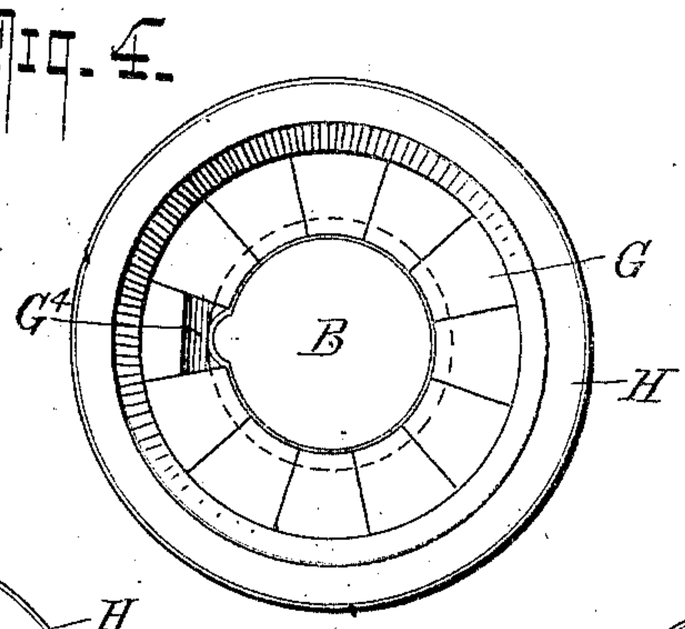


Fig. 5.

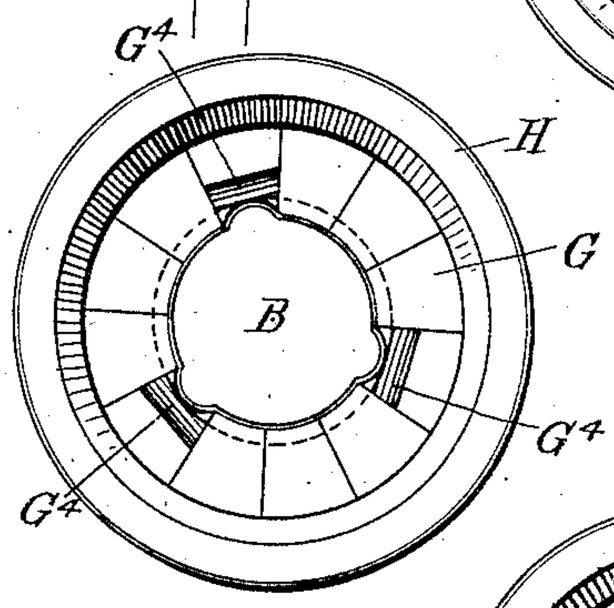


Fig. 6.

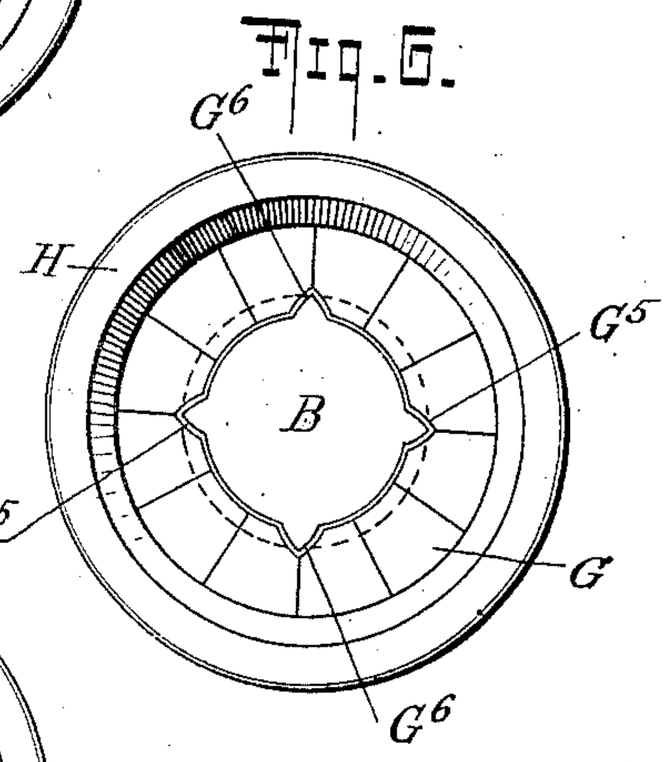
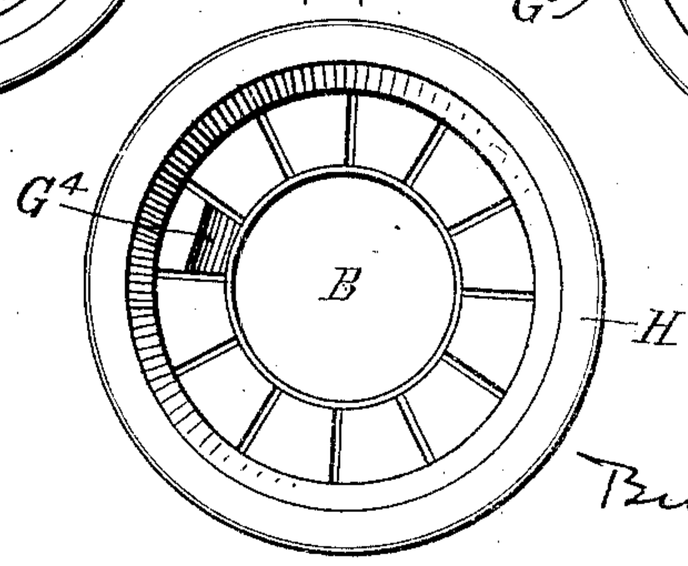


Fig. 4a.



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JOHN D. LORD, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, OF ONE-HALF TO RALPH L. SPOTTS, OF NEW YORK, N. Y.

MECHANISM FOR APPLYING BOTTLE-CAPS.

983,829 Specification of Letters Patent. Patented Feb. 7, 1911.

Application filed August 5, 1908. Serial No. 447,045.

To all whom it may concern:

Be it known that I, JOHN D. LORD, a citizen of the United States, and resident of the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Mechanism for Applying Bottle-Caps, of which the following is a specification.

My invention relates to a crimping device or chuck for applying caps to bottles and has for its object to provide a very simple and efficient device of this character.

Reference is to be had to the accompanying drawings in which—

Figures 1 and 2 are longitudinal sections showing one form of my invention in two different operative positions; Fig. 3 is a similar view with only the casing and guide in section and with the parts in the position of rest; Fig. 4 is a bottom view with the parts in the position shown in Fig. 2, the bottle being omitted; Fig. 4ª is a similar bottom view with the parts in the position shown in Fig. 1, and Figs. 5 and 6 are bottom views of two other forms of my invention.

A indicates a bottle which at its mouth is provided with the well-known bead to produce an outwardly flaring surface adapted to hold the lower edge of the cap which is crimped under it. The cap B may be simply in the shape of a disk with a cylindrical flange depending from its outer edge, said cap containing a washer or packing if desired.

The chuck employed by me comprises a plunger head C adapted to engage the cap as shown in Figs. 1 and 2. This head is connected as by means of a screw D with a disk E projecting slightly beyond the adjacent face of the head and adapted to rest against an annular lip or shoulder F′ on the guide F. The said guide is provided with a flaring inner surface F², which is adapted to engage a corresponding outer surface G′ upon a series of crimping jaws G. Each of these jaws is provided at its upper end with a finger G² seated in an annular recess C′ of the head C in such a manner that the connection of the jaws with the head is practically a pivotal one, that is, each jaw may rock about its upper end. The guide F has an outward projection F³ engaging a corresponding interior shoulder in the annular casing H which is provided at its lower end with an opening H′ through which the bottle mouth with the cap may be inserted. The guide F is forced against the shoulder of the casing H by means of a cap J screwing into the upper end of the casing H. With this cap is rigidly connected a stem K and a coiled spring L is interposed between this stem and the disk E which spring therefore has a tendency to move the said disk against the lip F′. A spring M surrounds the lower ends of the jaws, each of which is provided with a small groove to receive said spring which tends to bring the jaws together at their lower ends as shown in Fig. 3. It will therefore be understood that the parts F, H, J and K are rigidly connected in the normal operation of the machine, while the parts C, D, E are movable vertically in relation to those first mentioned and the jaws G are capable of a slight vertical movement and furthermore of a rocking movement as hereinbefore referred to. The stem or rod K is connected with a mechanism suitable for imparting a vertical motion to it; a hydraulic press, or any other press is available for this purpose.

It will be noticed that each of the jaws G is provided at its lower end upon its inner surface with a crimping portion G³. One of the jaws, however, instead of having such a projection, is cut out or recessed as shown at G⁴ in Figs. 2, 4 and 4ª.

The action of the apparatus is as follows: The parts at first occupy the position shown in Fig. 3 with the jaws G held closely against each other by the spring M and the head C in its lower position under the influence of the spring L. As the chuck descends the cap B will fit between the crimping projections G³ of the jaws G and since the spring M is quite weak, the jaws will spring outward as illustrated in Figs. 1 and 4ª. If then the chuck descends farther, the motion of the head C being stopped by the cap end of the bottle, it follows that only the casing of the chuck and the parts connected therewith rigidly will continue to move downward, compressing the spring L and causing the jaws G to rock on their upper ends and to swing inward at their lower ends so that the flange of the cap B is bent or crimped under the bead of the bottle neck as shown in Figs. 2 and 4 at all points except where the recess G⁴ occurs. At this point the flange of the cap will retain approximately its

original diameter and will thus form on the finished cap, a projection or lip standing away from the lower edge of the cap and from the bottle (see Fig. 2) and thus afford a convenient means for engagement by a tool used in removing the cap. In the final position illustrated by Fig. 2 the outer surface of the head and the inner surfaces of the jaws G are preferably in close engagement with each other as shown. It will be understood that the movement of the jaws G from the position as shown in Fig. 1 to that shown in Fig. 2 is due to the action of the inclined surface F^2 upon the inclined outer surfaces of the jaws. These two inclined surfaces also are in close engagement with each other in the final position Fig. 2 so that the device is extremely strong in such position. As soon as the chuck moves upward again, the spring L will gradually restore the parts to the position shown in Fig. 1, the upper surfaces of the crimping projections G^3 being beveled so that the jaws may open automatically to release themselves from the crimped cap.

In Fig. 5 I have shown a construction in which three jaws instead of one are provided with cut-outs G^4, the cap crimped with this chuck would therefore have three lips instead of one.

In Fig. 6 I have illustrated another construction in which adjacent corners G^5 of two adjoining jaws G^6 are cut out or recessed to form together pointed recesses which will result in the formation of corresponding lips on the cap. Fig. 6 shows four such recesses, but it will be understood that a greater or smaller number of them may be provided and even one such recess will be sufficient.

It will be seen that the device is very simple and affords great advantages as to the application and crimping of the bottle cap and moreover the chuck is readily separable. For this purpose the cap J can be unscrewed which will leave the guide F free to be removed with the jaws and the head C and by removing the screw D the jaws G, the head C and the disk D can be separated from each other and from the guide F so that either part will be individually accessible. The jaws G are not connected with each other in any manner except by the spring M and even this spring fits them loosely.

I claim:

1. In a device for applying caps to receptacles a non-rotatable head, members carried thereby loosely and movable relatively thereto toward the cap, said members being arranged with their side surfaces substantially in engagement with each other, the inner surfaces of said members being constructed differently, so that some will affect the cap, while others will not, and a casing movable relatively to the head and arranged to force all of the said members simultaneously toward the cap.

2. The combination of a non-rotatable head, members mounted to swing relatively thereto and arranged with their side faces substantially in engagement with each other, sundry of said members having crimping projections at their inner surfaces, while one or more of said members are devoid of such projections and means for simultaneously swinging all of said members inward.

3. In a device for crimping bottle caps, an annular series of members arranged with their side faces substantially in engagement with each other and movable only in a direction transverse to the axis of the bottle, sundry of said members having crimping projections at their inner surfaces while one or more of said members are devoid of such projections, and means for simultaneously operating all of the members.

4. In a device for applying bottle caps, an annular series of members arranged with their side faces substantially in engagement with each other and mounted to swing only in a direction transverse to the axis of the bottle, sundry of said members being provided with crimping projections at their inner surfaces while one or more of them are devoid of such projections, a spring surrounding said members directly and having a tendency to keep them together and means for simultaneously giving all of said members a crimping movement.

5. The combination of the head, the swinging jaws carried thereby, the disk projected from the head adjacent to the pivot ends of the jaws, the casing provided with a guide having an inwardly projected lip which has a limited longitudinal movement between said disk and jaws, and means for giving said jaws a crimping movement by the movement of the casing relatively to the head.

6. The combination of the head, the swinging jaws carried thereby, the disk projected from the head adjacent to the pivot ends of the jaws, the casing provided with a guide having an inwardly projected lip which has a limited longitudinal movement between said disk and jaws, an elastic connection between the casing and the head, and means for swinging the jaws by the movement of the casing relatively to the head.

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

JOHN D. LORD.

Witnesses:
JOHN LOTKA,
JOHN A. KEHLENBECK.