

(No Model.)

2 Sheets—Sheet 1.

C. S. GOODING & R. L. ELLERY.  
EYE FORMING MECHANISM FOR BUTTON MACHINES.

No. 459,373.

Patented Sept. 8, 1891.

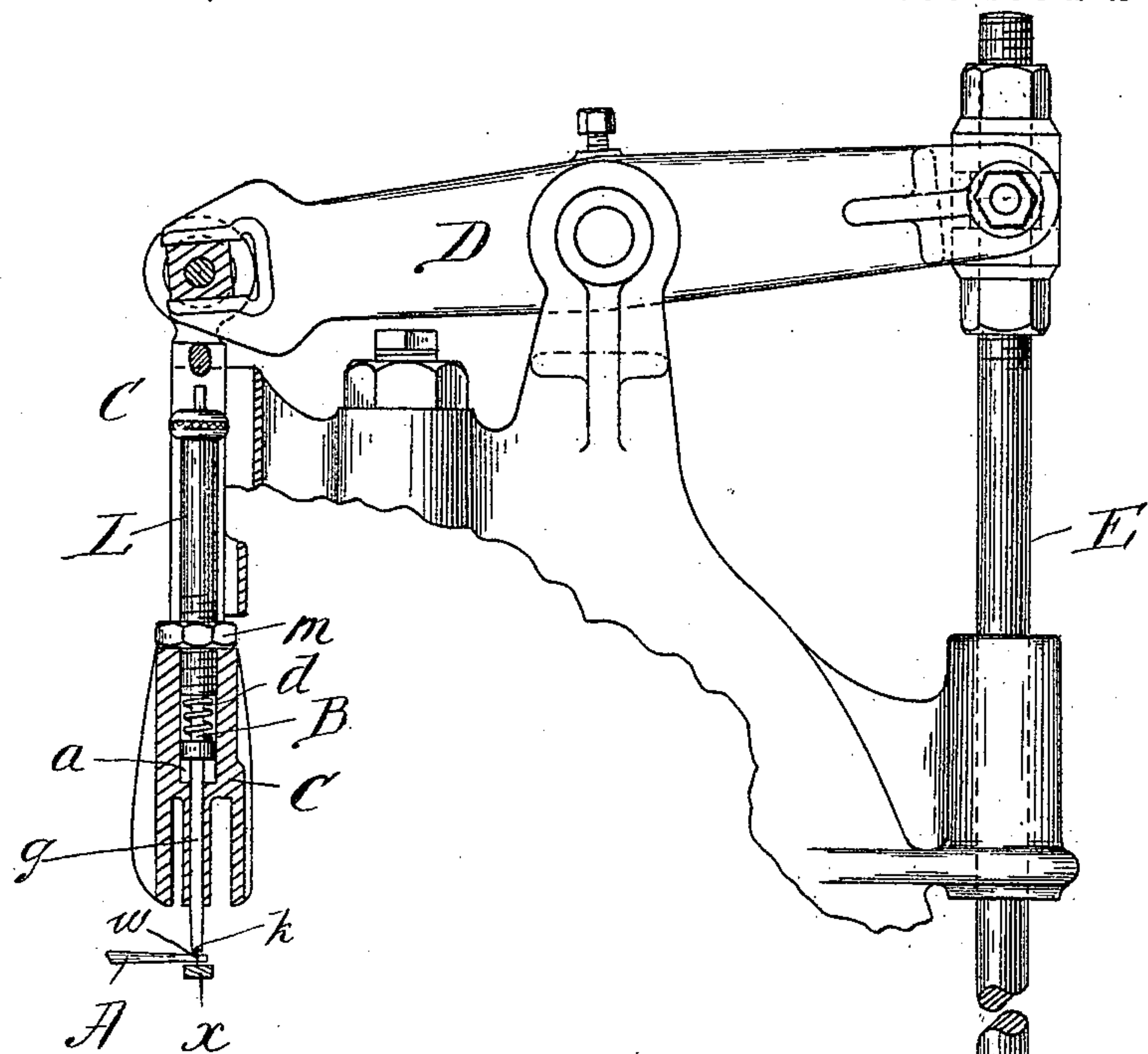
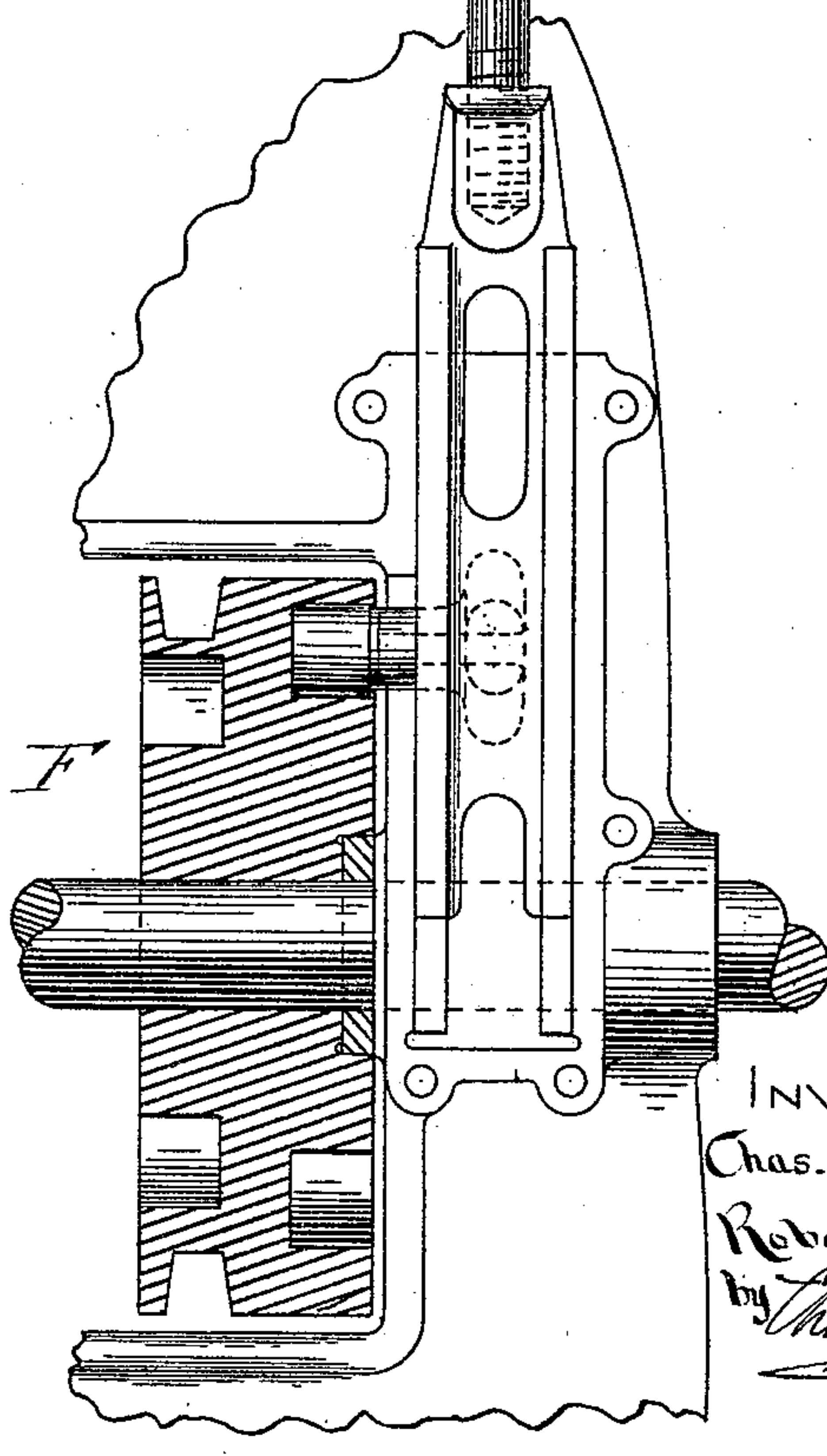


Fig. 1.



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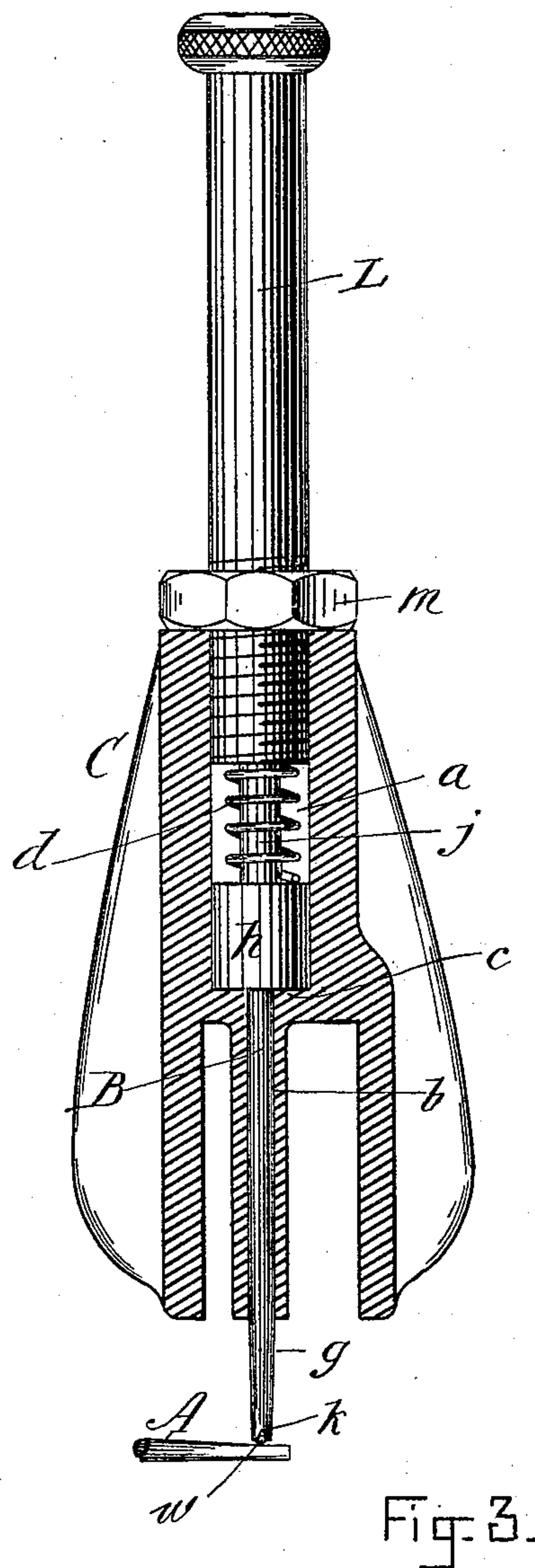
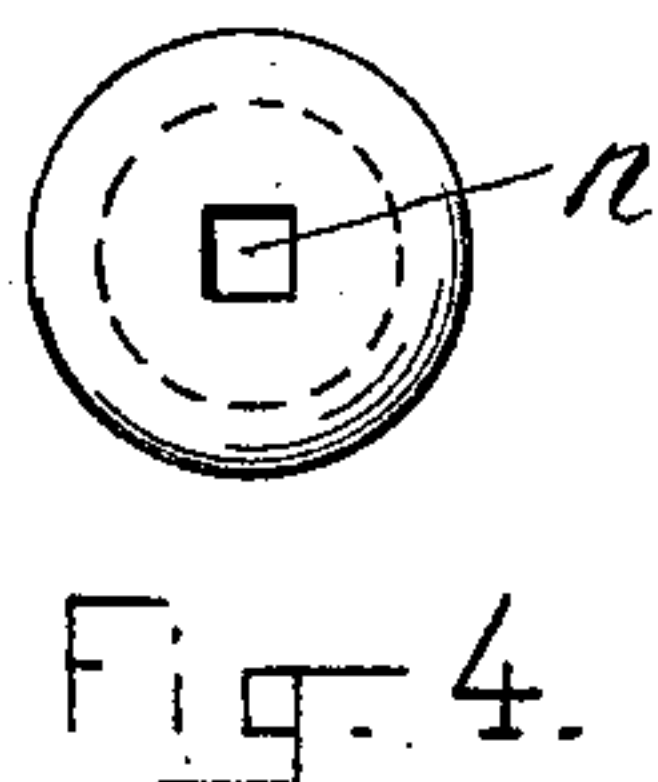
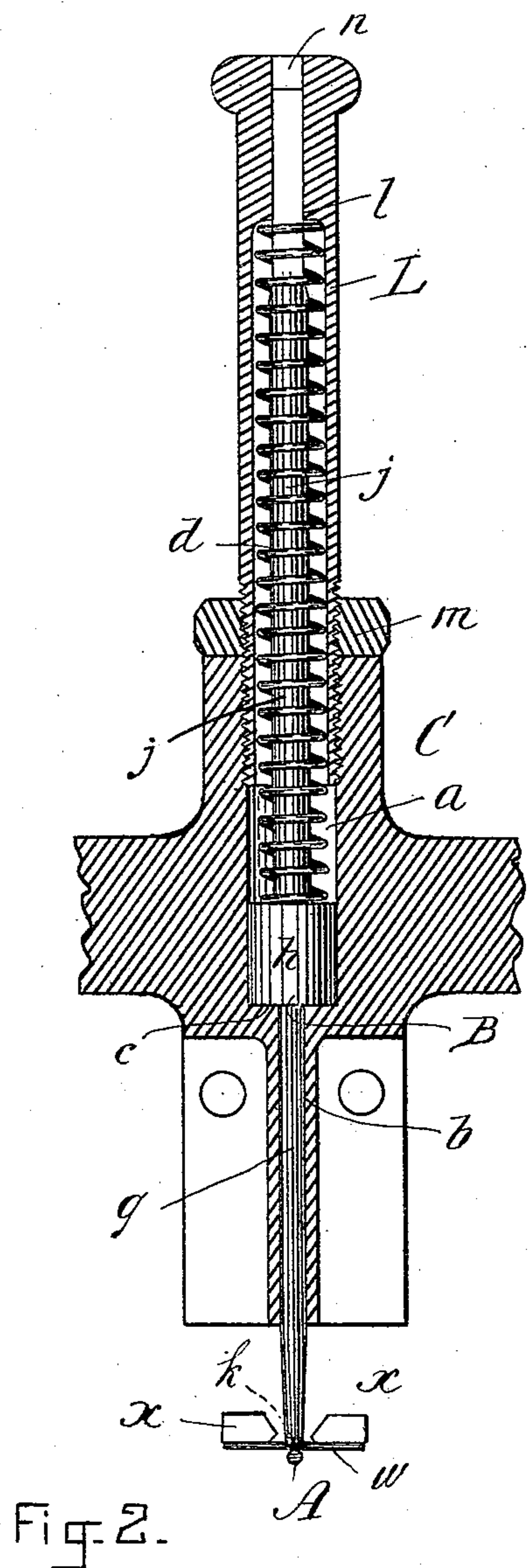
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INVENTORS:

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# UNITED STATES PATENT OFFICE.

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BOSTON, MASSACHUSETTS.

## EYE-FORMING MECHANISM FOR BUTTON-MACHINES.

SPECIFICATION forming part of Letters Patent No. 459,373, dated September 8, 1891.

Application filed December 6, 1890. Serial No. 373,832. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES S. GOODING, of Boston, in the county of Suffolk, and ROBERT L. ELLERY, of Taunton, in the county of Bristol, State of Massachusetts, citizens of the United States, have invented new and useful Improvements in Eye-Turning Mechanism for Button-Machines, of which the following is a specification.

This invention relates to machines for bending wire into the form of a staple or loop, in which is comprised a bar or rod on which the wire is supported by an intermediate portion while its terminals are bent, the present invention particularly and only relating to novel devices in such a machine which act to hold the wire in confinement upon the said former-bar previous to and during and, if desired, after the bending of the terminal portions of the wire.

The invention essentially comprises a former-bar for the wire and a carrier and means for imparting thereto a given reciprocatory movement transversely to and from said bar, an eye-holding spindle or member movable on said carrier and spring supported or pressed thereon in the direction of the forward movement thereof and adapted to have a yielding motion against said spring and with relation to said carrier.

The invention further consists in subordinate structural features and characteristics, all substantially as will hereinafter more fully appear, and be set forth in the claims.

In the accompanying drawings, Figure 1 shows in elevation a portion of a machine for forming wire into staple or eye form, the carrier for the wire-holding device being shown in vertical section. Fig. 2 is substantially an enlarged vertical sectional view of the carrier and eye-holding device, taken at right angles to Fig. 1. Fig. 3 is a sectional view of the carrier and eye-holder, as seen in Fig. 1, but on a larger scale; and Fig. 4 is a view of the upper end of the tubular nut, hereinafter described.

In the drawings, A represents a bar on or about which the wire is by its intermediate portion supported and by its terminals bent,

the wire standing in a line in and being bent into a plane transversely of said rod.

B represents the wire-confining device, and C the carrier therefor, which has a rectilinear reciprocating motion transversely with relation to said former-bar through means of the engagement with an upper portion of said carrier of a lever D, to the end of which is connected a plunger-rod E. The plunger-rod receives its movement by the engagement of a stud on an extended appliance thereof with the groove of the cam F.

The carrier C is provided with a chamber *a*, of cylindrical form, from the lower end of which, that forms a seat *c*, there is an axially-extended and contracted passage *b*. The holding device B consists of a lower spindle-like member *g*, an intermediate cylindrically-formed enlargement *h*, and an upper spindle-like member *j*. The lower spindle *g* extends downwardly from the enlargement *h*, which normally rests on said seat *c*, through the said contracted passage, and has an extremity formed with a notch *a*, the length of which ranges transversely of the said former-bar A, and the upper spindle member *j* extends upwardly through and beyond the said cylindrical chamber in the carrier and has its end portion of squared or other equivalent form. A spiral spring *d* encircles the said spindle *j* for the greater portion of its length, terminating, however, below the end of the spindle, and rests by its lower end upon the said enlargement *h*. The said chamber *a* in the carrier at and below its orifice is screw-threaded, with which engages the externally-threaded lower portion of a tube L. The chamber in said tube is for the accommodation therein of the spiral spring, the seat for the upper end of which is formed by a shoulder *l*, Fig. 2, which is constituted by the contracted passage through the upper portion of the tube, which passage is of a squared or otherwise corresponding cross-sectional shape, as at *n*, to the inclosed portion of the said spindle *j*. By such engagement there is no rotational movement of the holding device with relation to the carrier and tube, although it will be apparent from the construction shown and



described that said holder is capable of moving axially on and with relation to the carrier, but against the reaction of said spring, which normally maintains the holder in its forward disposition, as is shown in Fig. 2.

There is preferably provided a check-nut *m* about the screw-threaded portion of the tube and next to the upper end of the carrier. By properly loosening the check-nut and turning the said tube the compression of the enclosed spring may be regulated to accord with different spring-reacting capabilities desired for the holding device for certain varieties of work, the check-nut effectually locking the parts when in adjustment.

The operation of the mechanism need only be briefly described. At the time the carrier *C* is in an upper position the wire from which to form the staple or eye is fed across the former-bar at right angles thereto, (being usually fed from a continuous straight supply against an abutment or gage and then cut off.) The carrier then descending, the holder *g* by its grooved end bears upon the wire directly over the said bar and confines it thereagainst, there being more or less movement downwardly of the carrier after the holder has come to a bearing upon the wire, when of course the spring is compressed within its cylindrical casings, the upper spindle portion playing through the said squared opening in the upper end of the tubular nut. The holder being constrained against any rotational movement and having a grooved end, of course prevents the section of wire (indicated by *w*) held thereby on the former-bar from any swinging or shifting motion thereon. The devices may then operate to work upon the terminal portions of the wire, immediately of which the same is held in any desired manner; and *x x* represent bending devices, which have a vertical movement relative to the said terminals of the wire borne upon thereby, and the downward movement of the said devices, which is to be imparted by suitable mechanism not necessary to here specify, effects the downward bending of said terminals to form the wire into staple form, after which it may be otherwise shaped or further modified in accordance with its requirement for intended use, and plainly there will be a confining bearing by the holder on the formed staple or eye after the carrier *C* has been moved upwardly quite a distance.

We claim—

1. The combination of a former-bar for the wire and a carrier and means for imparting thereto a given reciprocatory movement transversely to and from said bar, and an eye-hold-

ing spindle or member movable on said carrier and spring supported or pressed thereon in the direction of the forward movement thereof and adapted to have a yielding motion against said spring with relation to said carrier, for the purpose set forth.

2. The combination of a former-bar for the wire and a carrier and means for imparting thereto a reciprocatory movement transversely to and from said bar, and an eye-holding spindle or member constrained against rotation but movable longitudinally on said carrier and spring supported and pressed thereon in the direction of the forward movement thereof and provided at its forward end with a groove extending in the direction transversely of said bar, for the purpose set forth.

3. The combination of a former-bar for the wire and a reciprocatory carrier provided with the chamber, the holding spindle or member by a portion thereof movable in said chamber, a working portion thereof extending forwardly and the other extremity thereof being extended in the reverse direction, a spiral spring having an engagement with said holding member, and a tube having a screw engagement with the said carrier and bearing on the said spring, for the purpose set forth.

4. The combination, with a former-bar and a reciprocatory carrier provided with the chamber *a* and the contracted passage leading therefrom, and a seat *c*, of the holding member consisting of the lower spindle portion *g*, the enlargement *h*, adapted for a rest on said seat, and the upper spindle portion *j*, the spring encircling said upper spindle and resting on said enlargement, and the tube having a screw engagement with said carrier inclosing and having a bearing on the upper end of said spring and having in its upper portion a passage through which the said upper spindle is longitudinally movable, substantially as described.

5. In combination, the former-bar and a reciprocatory carrier provided with the chamber *a*, the passage *b*, and seat *c*, the holding device comprising lower spindle *g*, having the notch *k*, the enlargement *h*, and the upper squared spindle *j*, the tube screwing into the said chamber and having in its head the squared passage and the spring, all in the operative arrangement substantially as and for the purpose described.

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