

(No Model.)

4 Sheets—Sheet 1.

F. J. ILSLEY & A. S. FERNALD.

MACHINE FOR MAKING BUTTONS.

No. 291,907.

Patented Jan. 15, 1884.

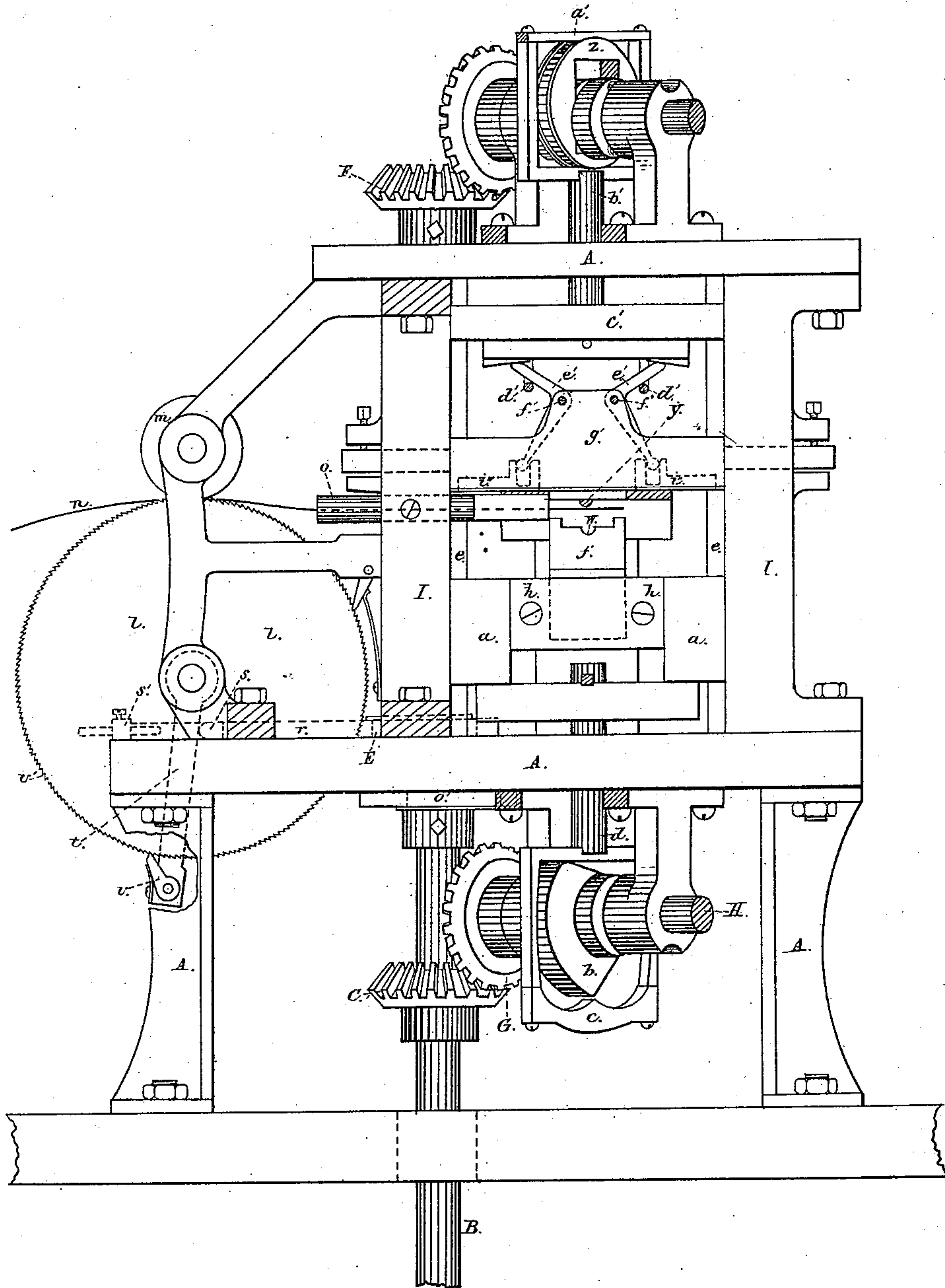


Fig. 1.

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Alfred W. Ball
John P. McGuigan.

Inventor.
F. J. Ilsley
Augustine S. Fernald
Per atty William Henry Clifford

(No Model.)

4 Sheets—Sheet 2.

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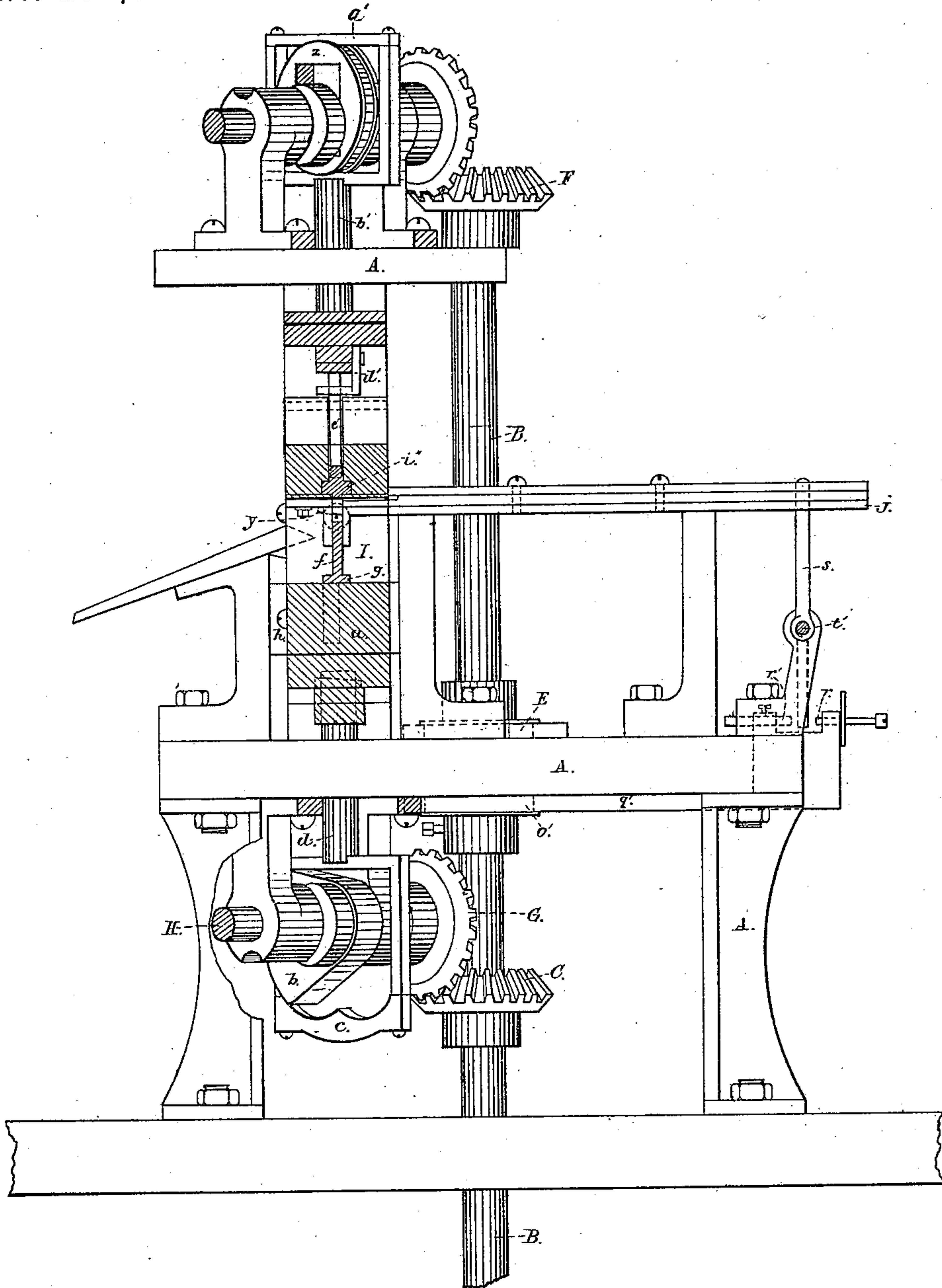


Fig. 2.

Witnesses:

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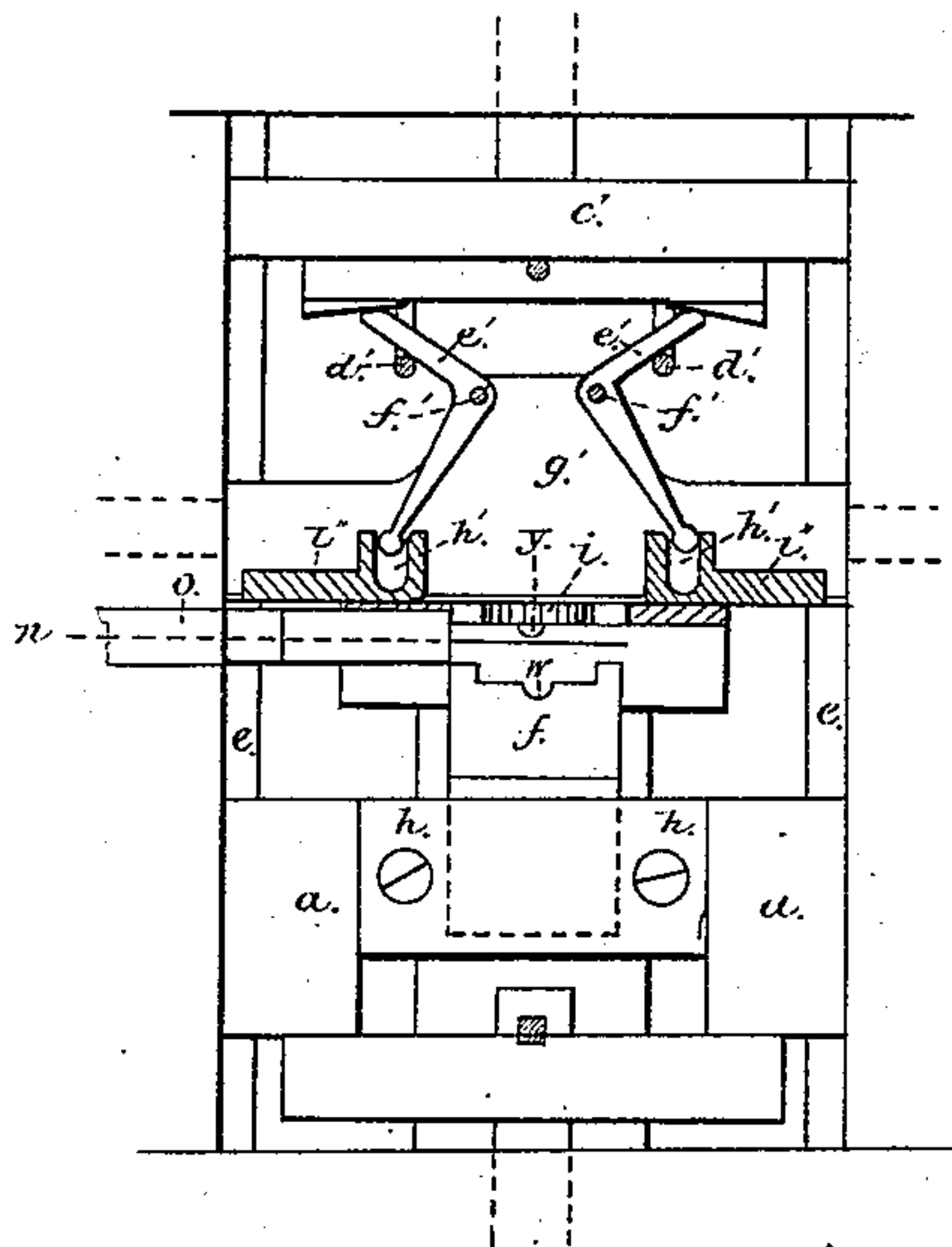


Fig. 3.

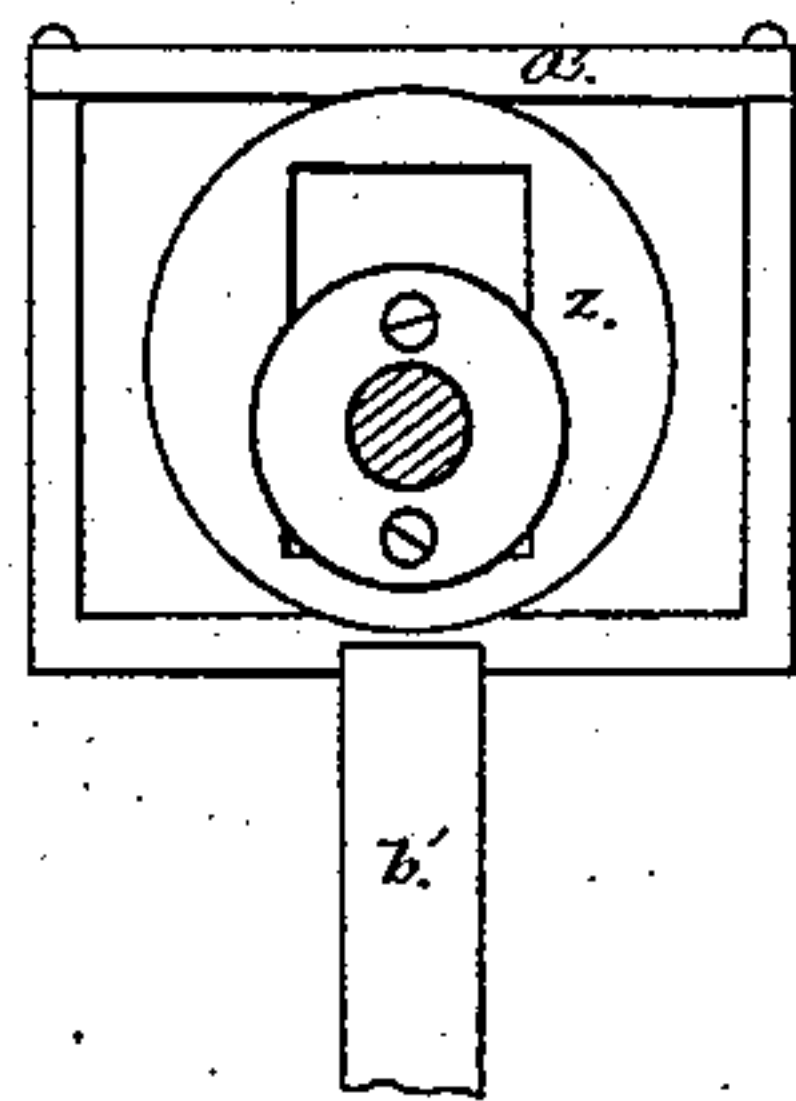


Fig. 5.

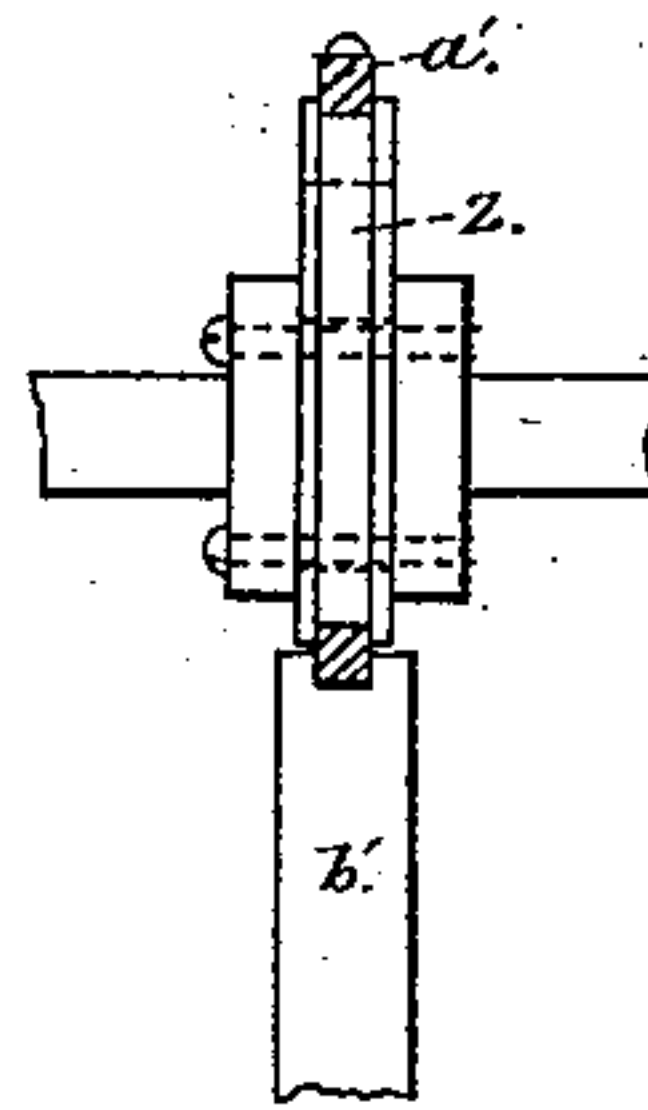


Fig. 6.

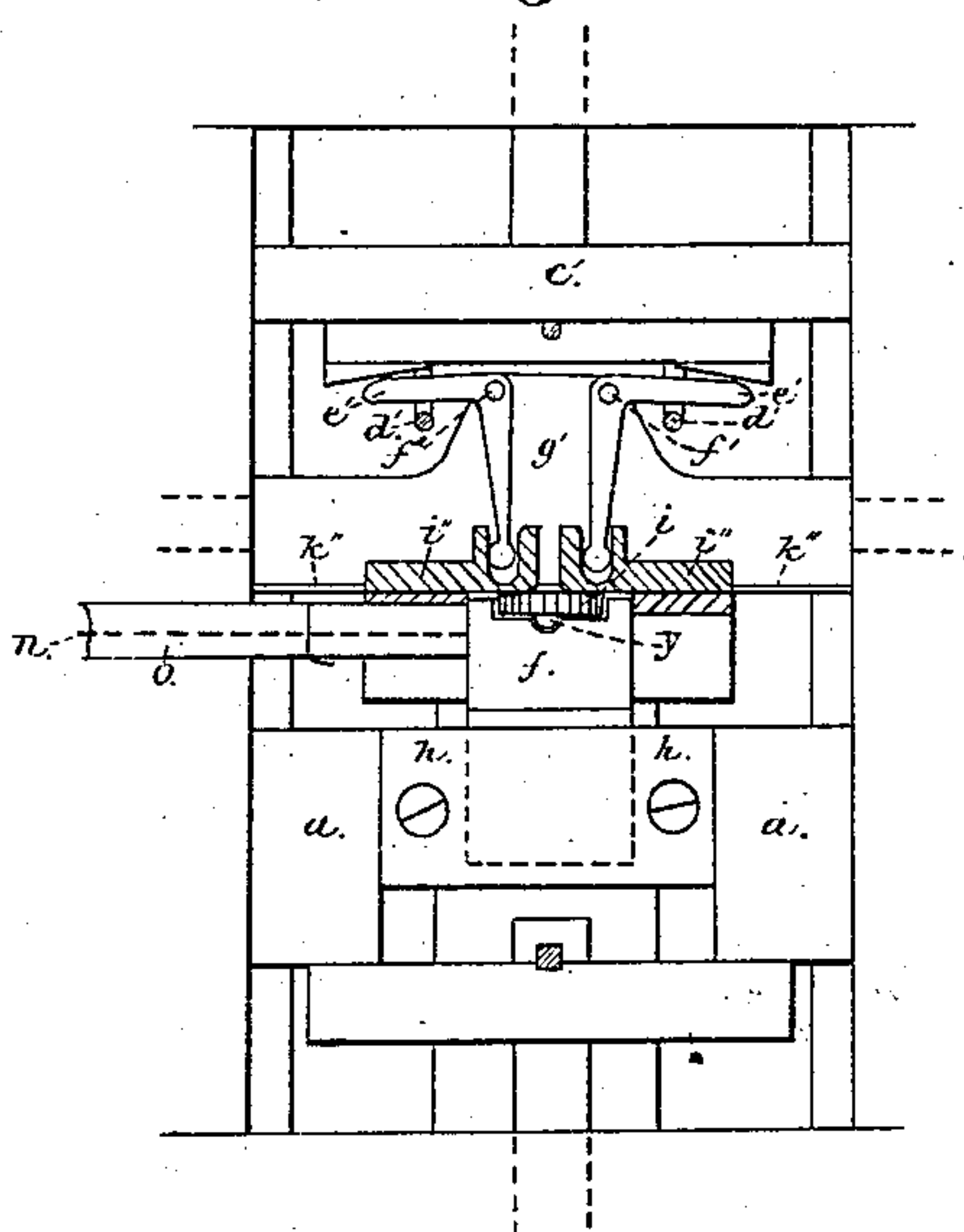


Fig. 4.

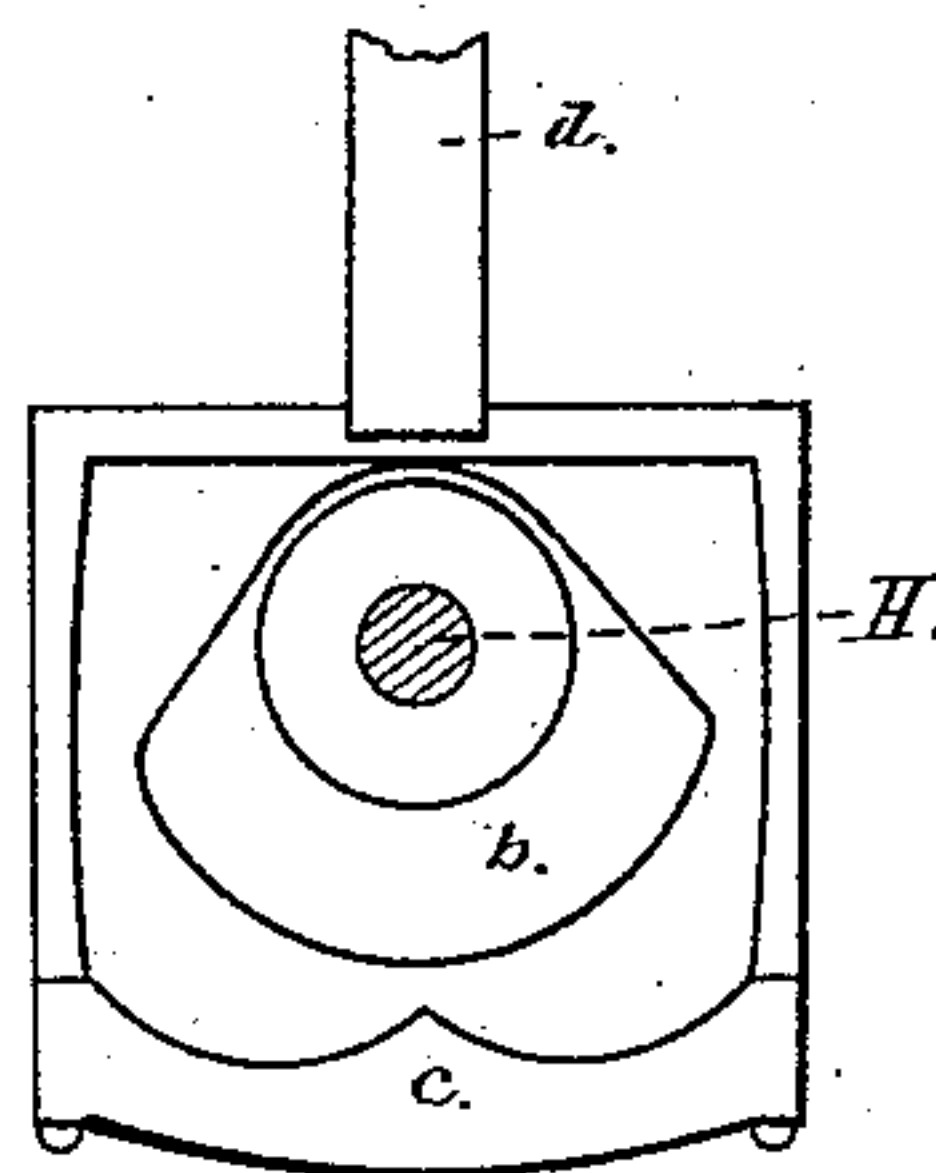


Fig. 7.

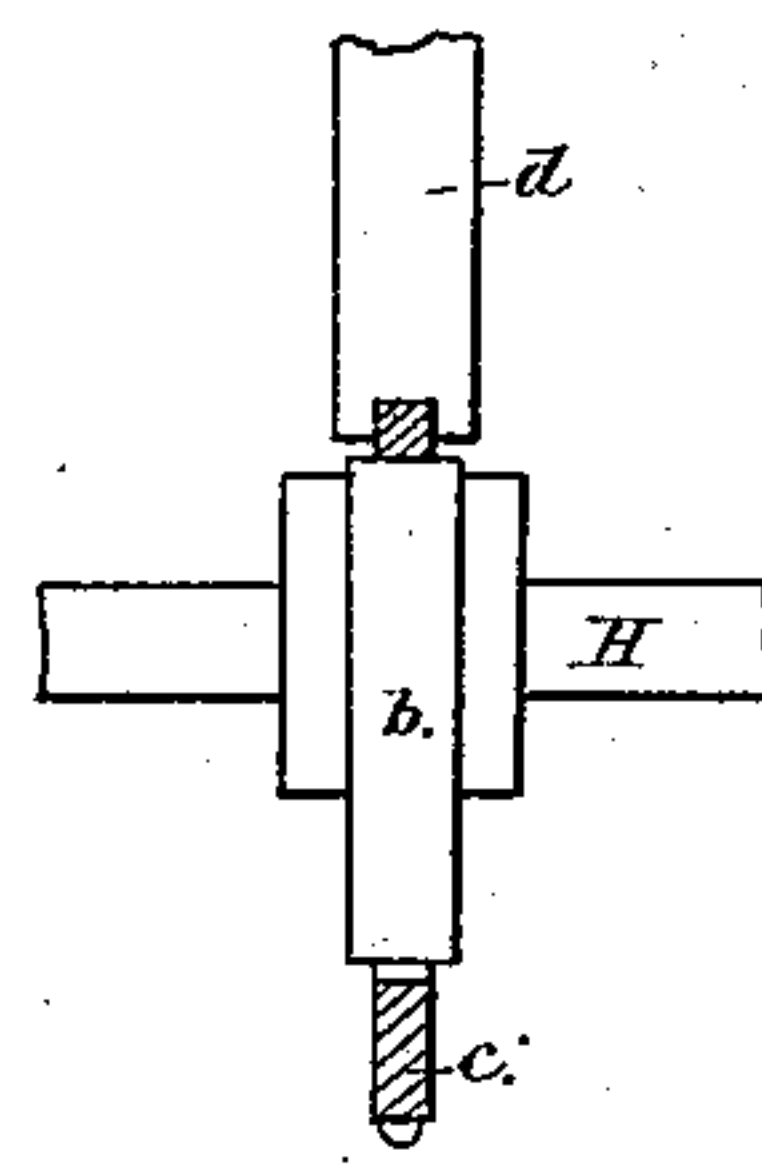


Fig. 8.

Witnesses:

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John P. Fenigan.

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Frederick H. Kelly
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MACHINE FOR MAKING BUTTONS.

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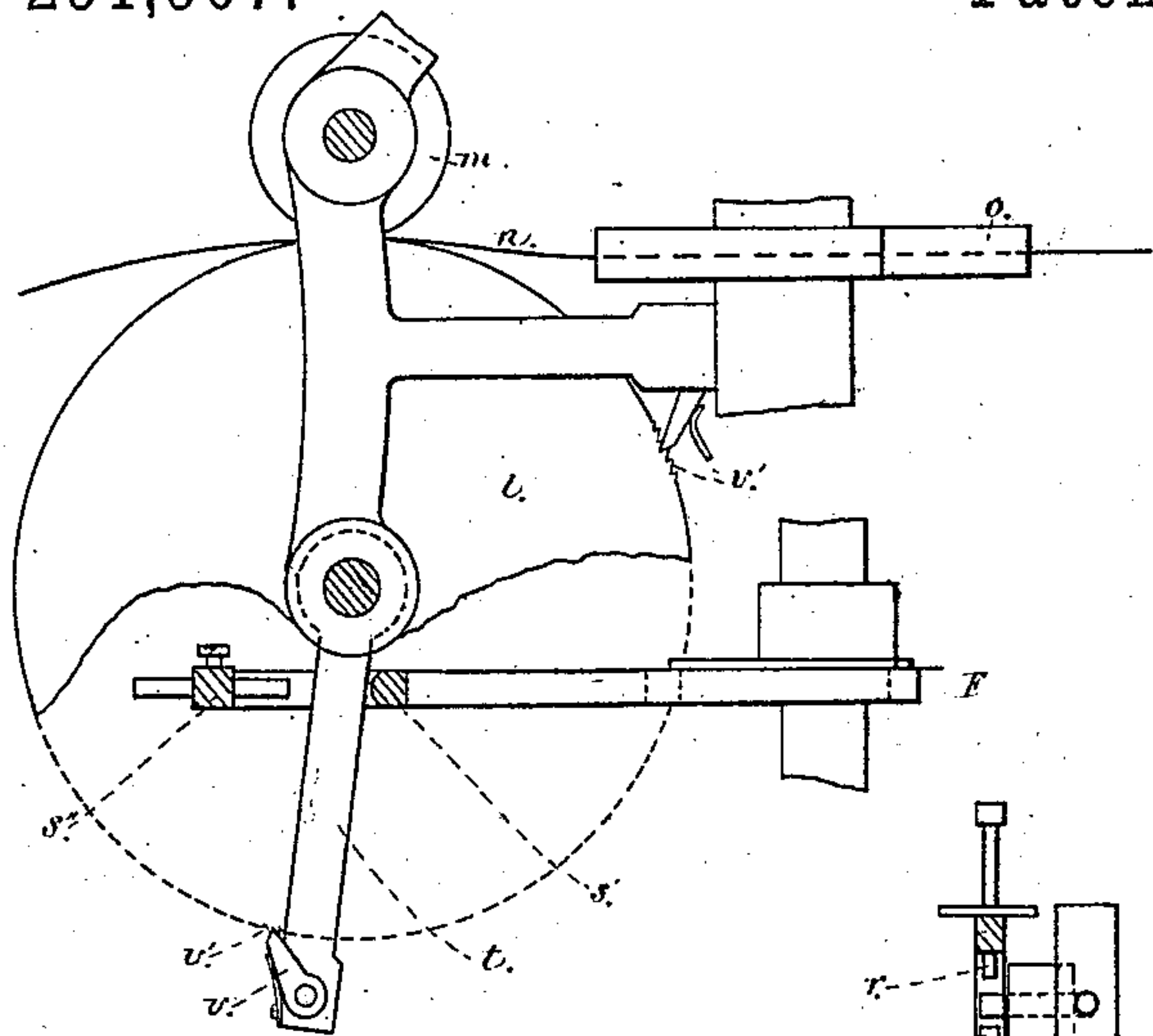


Fig. 9.

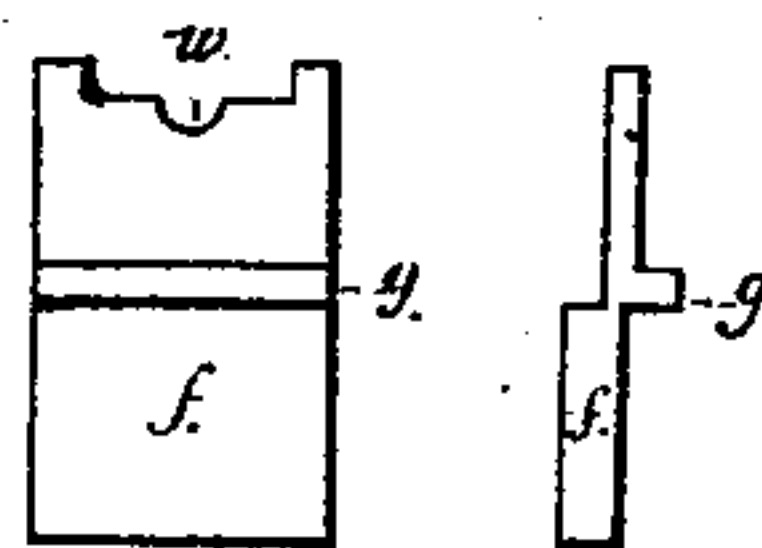


Fig.12. *Fig.13.*

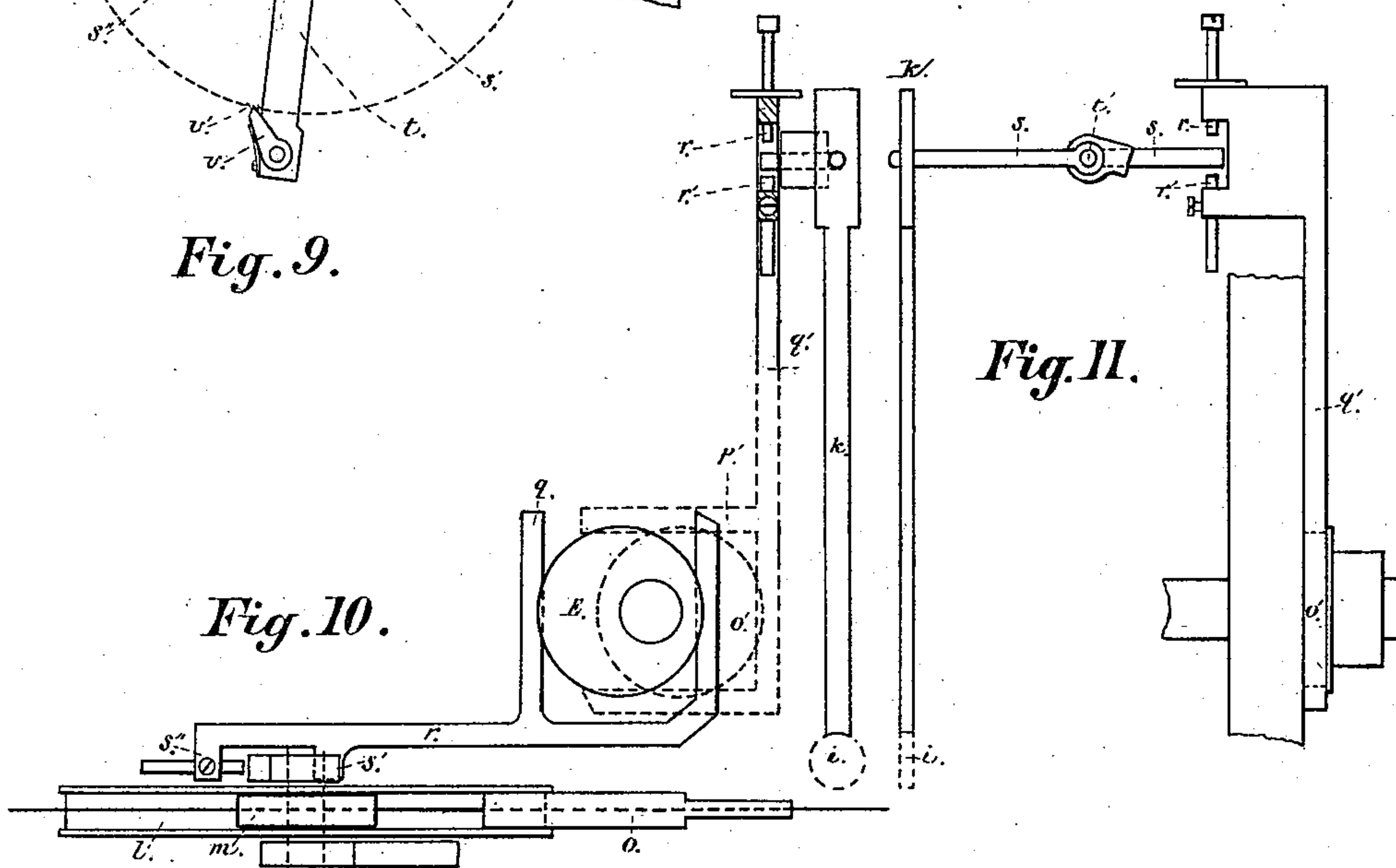


Fig. 10.

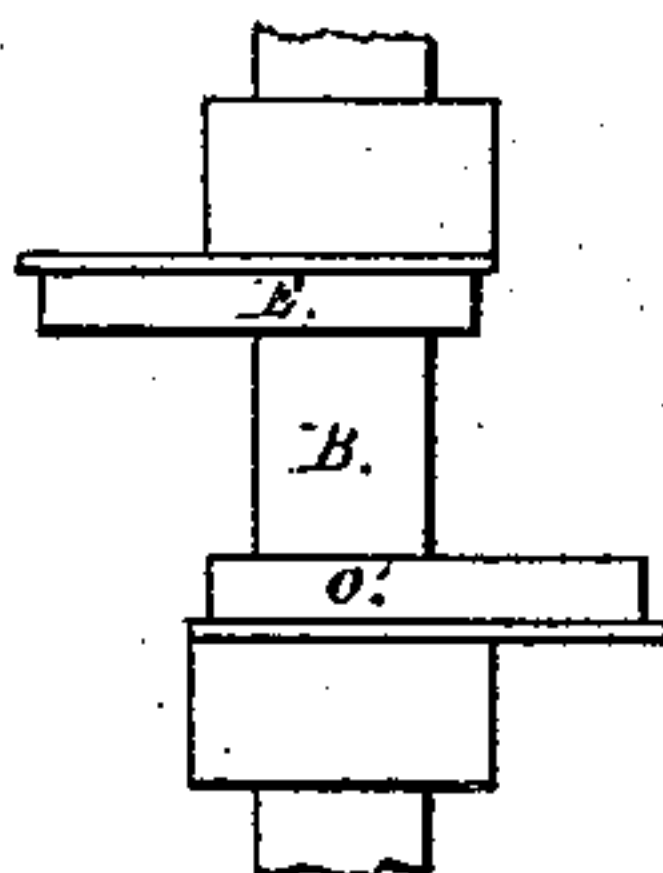


Fig. 14.



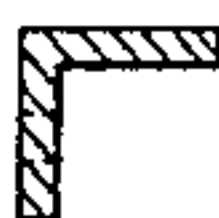
Fig. 15.



Fig. 16.



Fig. 17.



Witnesses: Fig. 18.

Alfred W. Gally.
John F. Kenigan.

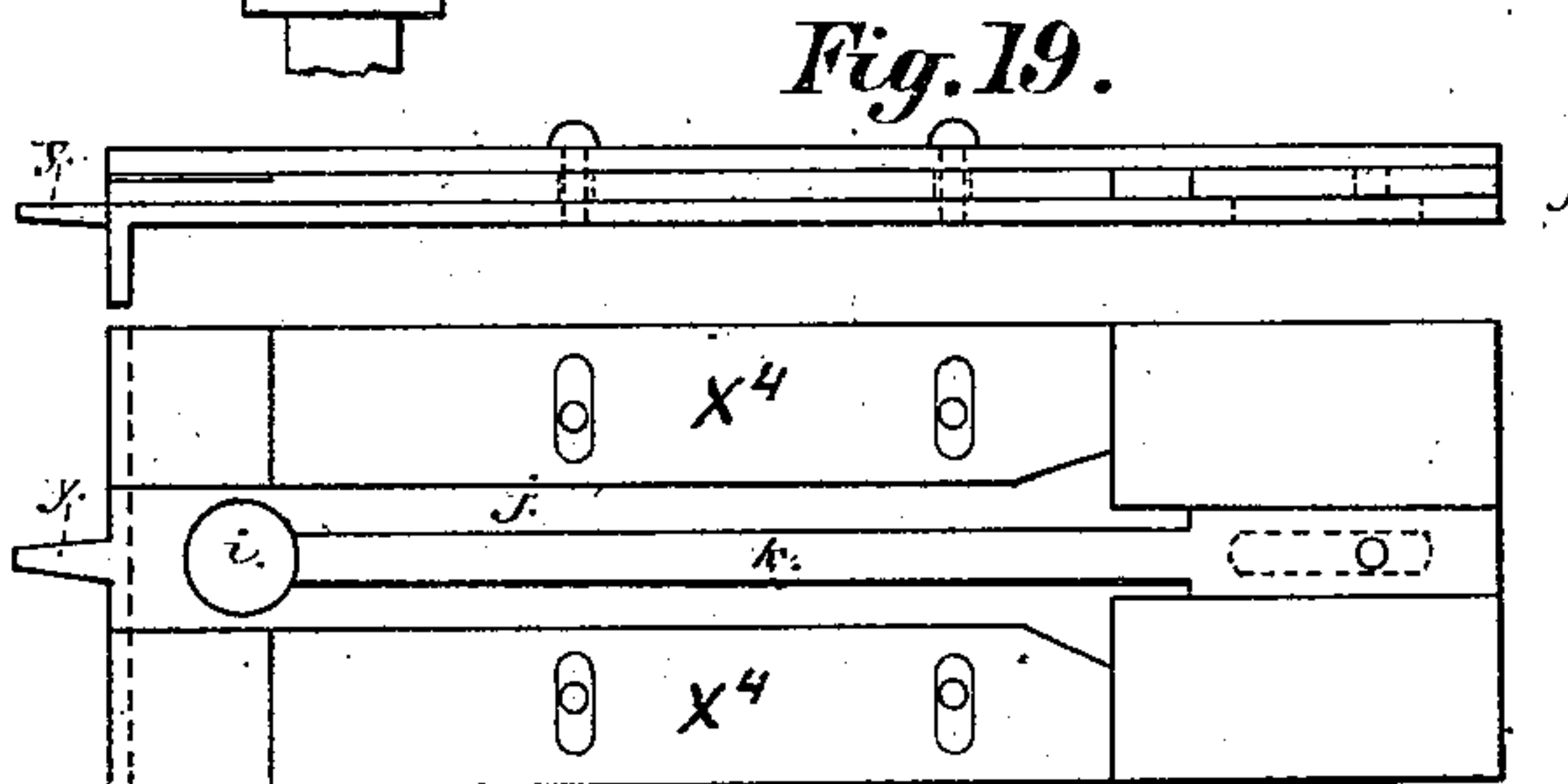


Fig. 19.

Fig. 20.

0. **Inventor.**
Frederick J. Wesley
Augustine S. Fernald
Per atty William Henry Clifford

UNITED STATES PATENT OFFICE.

FREDERICK J. ILSLEY AND AUGUSTINE S. FERNALD, OF PORTLAND, ME.

MACHINE FOR MAKING BUTTONS.

SPECIFICATION forming part of Letters Patent No. 291,907, dated January 15, 1884.

Application filed May 7, 1883. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK J. ILSLEY and AUGUSTINE S. FERNALD, of Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Machines for Making Buttons; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is a front view, part in perspective, of our machine. Fig. 2 is a side elevation, in part section and part in perspective, of the same. Fig. 3 is a view in detail of the devices for bending the wires over the top of the interior blanks of the button, and shows the slides open or apart from each other. Fig. 4 is a view of the same as seen in Fig. 3, with the slides brought together over the interior blanks of a button, or in the position they would be after having bent the wire over said blank. Fig. 5 is a view in detail of the eccentric by which the slides seen in Figs. 3 and 4 are operated. Fig. 6 is an edge view of Fig. 5. Fig. 7 is a front view of the eccentric by which the carriage *a* is worked. Fig. 8 is an edge view of the same. Fig. 9 is a side view of the wheel that feeds the wire to the machine. Fig. 10 is a top edge view of the same with certain ancillary devices. Fig. 11 is a side view of the device for moving the button-disks into position to be bound by the wire. Fig. 12 is a front view of the plunger that cuts off the wire and bends it up under the bottom side of the button-disk. Fig. 13 is an edge view of the same. Fig. 14 shows the position of the eccentrics *o'* and *E* on the main shaft *B* above and below the plate. Fig. 15 is a front view of the guard placed in front of the wire-cutting plate. Fig. 16 is a back view of the guard. Fig. 17 is a top view. Fig. 18 is an end view. Figs. 19 and 20 are edge and plan views, respectively, of the devices for feeding the button-blanks to the place where they receive the wires.

Same letters show like parts.

The object of our invention is to produce a machine for cutting, folding, and bending around the blanks of buttons certain wires and

forming the wires into a loop or loops on the under side of the blanks. The buttons referred to are of the kinds patented to Augustine S. Fernald by Letters Patent Nos. 203,022 and 210,194, and dated April 30, 1878, and November 26, 1878.

On the shaft *B* is set the eccentric *o'*, working in the frame *p'*, which carries the horizontal arm *q'*. This arm has the adjustable screw *r'*, which takes onto the lower arm of the crank *s*, pivoted at *t'*. The other arm of this crank *s* moves the horizontal slide *k*, which feeds the blank *i*, in upon the bar *y*, where said blank receives the wire.

A is the frame of our machine. *B* is the main and driving shaft of the same. It is vertically placed, and carries the bevel-gear *C*, eccentric *o'*, eccentric *E*, and bevel-gear *F*. The bevel-gear *C*, horizontally placed, meshes with the bevel-gear *G*, revolving in a vertical plane. The bevel-gear *G* rotates the horizontal shaft *H*. Upon this shaft is rigidly set the cam *b*, revolving in the frame *c*. Both of these are of the form seen in the drawings. The effect of the combination of the cam *b* and frame *c* is to alternately raise and lower the vertical rod *d*, which operates the carriage *a*. The carriage *a* moves in guides *e* on the insides of the vertical parts *I* of the frame *A*. This carriage *a* carries the plate *f*, which serves both to cut the wire that is fed into the machine, and also to bend it up under the bottom sides of the blanks, and also to form the wires into a loop on the bottom side of the blank. A front and side view of this plate at Figs. 12 and 13 further illustrate its form and shape. It has a lip, *g*, that rests over the angle of the horizontal part of the carriage *a* in a recess cut into the front face of the said horizontal part. This can be seen in Fig. 2, as well as in Fig. 3 and Fig. 1. It is held in place by a piece of metal placed in front of it and bolted to the carriage. (See *h*.) A button-blank or interior disk, *i*, is placed on the table *j* in front of the horizontal plunger *k*. Wire is fed into the machine by the combined action of the two wheels *l m*. The wire is seen at *n*. It is fed through the conductor *o*.

The method of advancing the wire as required for the purposes of the machine is as follows: The wire is entered between the wheels *m* and *l*, as seen in Fig. 9. On the main shaft

B, and resting on the frame A, is the eccentric E. This revolves in the rectangular frame *q*, and imparts to it a reciprocating motion. The frame *q* carries the horizontal arm *r*. This arm *r* has the two projections *s' s''*, between which is the arm *t*, set on the shaft of the wheel *l*. When the projection *s'* strikes the arm *t*, the wheel *l* is revolved a certain distance and feeds the wire along through the conductor *o* to the cutting-edge of the plate *f* and under the button-blank. The button-blank may be seen at *i* in Figs. 3 and 4. When the arm *r* is drawn back by the motion of the eccentric E, the projection *s''* strikes the arm *t* on the opposite side from the projection *s'*, and moves it back in readiness for another movement of the wheel. The lower end of the arm *t* is furnished with the pawl *v*, and the wheel is provided with a ratchet, *v'*, so that the one working into the other effects the desired intermittent revolution of the wheel *l*. Just as soon as the wire *n* has been fed into the machine and under the button-blank *i*, the carriage *a* begins to rise. It carries with it the plate *f*, which first cuts off the wire at the inner end of the conductor *o*, and then bends the wire up under the lower side of the button-blank, leaving two ends of the wire—one on each side of the blank—projecting upwardly in a vertical direction. It also forms the loop or eye in the center of the wire on the bottom side of the blank. The bending up of the wire perpendicularly is effected by the two vertical shoulders seen on the plate *f*. The bending of the wire flat up against the bottom side of the blank is done with the horizontal parts of the upper edge of the plate *f* on each side of the curved recess *w*, and the recess *w*, in combination with the bar *y*, having a rounded lower face, forms the eye. The bar *y* is seen in Figs. 3 and 4 and in other figures. The carriage *a* is moved by means of the cam *b* in the frame *c* and rod *d*. The curved edge of the cam, working against the upper part of the frame, lifts the carriage, and the point or angle, striking the projection on the inside of the lower part of the frame, draws the carriage downwardly. When the wire *n* has been bent to form the loop and its two ends have been bent up vertically, as before described, the ends are then to be folded closely down over the top side of the blank. We will now describe the mechanism by which this is done. On the top of the machine is an eccentric, *z*, working in a frame, *a'*. The frame carries the vertical rod *b'*, which is connected to the carriage *c'*. The revolution of the eccentric *z* alternately raises and lowers the frame *a'* and rod *b'* and carriage *c'*. Attached to the lower side of the carriage *c'* are two bent bars, *d' d'*, the horizontal parts of which reach under the two arms of the two bell-crank levers *e' e'*. These two bell-crank levers are pivoted at *f'* into the stationary

cross-piece *g'* of the frame of the machine. The lower arms of the levers *e' e'* play loosely into the vertically-cut recesses *h' h'* of the slides *i'' i''*. The descent of the carriage *c'*, in the manner hereinbefore set forth, draws the two lower arms of these bell-crank levers toward each other, and by means of them the slides *i'' i''*. These slides by this motion bend the two ends of the wire down flat and over the top face of the button-blank. When the carriage *c'* rises, the bent bars *d' d'* draw up the levers *e' e'*, and thus, spreading the lower arms thereof, move back the slides *i'' i''*, to await the bending up of the two ends of the next piece of wire cut by the plate *f*. The cross-piece *g'* has two slots cut down into it, in which work the bell-crank levers and the slides *i'' i''*, and the slides move on a base-plate, *k''*. Each button-blank so fitted with its wire is pushed out at the front of the machine and off from the bar *y* by the next succeeding blank behind it. The first motion of the machine is that of the bar *k* to feed up the blank. Next is the intermittent rotation of the wheel *l*, next the upward movement of the carriage *a*, and last the descent of the carriage *c'*. The order and succession is produced by the formation or shape of the cams or eccentrics occasioning the several motions.

The plate *k* is provided with the two side pieces, *x' x'*, which can be moved toward or away from each other, in order to admit between them button-blanks of different diameters.

What we claim as our invention, and desire to secure by Letters Patent of the United States, is—

1. The combination of the wheels *l m*, operating as described, the projections *s' s''*, arm *t*, pawl *v*, conductor *o*, plate *f*, and bar *y*, operating as herein set forth, to bend the wire in the manner described.

2. The combination of the shaft B, eccentric *o'*, frame *p'*, arm *q'*, screw *r'*, crank *s*, slide *k*, and bar *y*, as herein set forth.

3. In combination with the carriage *a*, the horizontally-moving slides *i'' i''*, bell-crank levers *e' e'*, carriage *c'*, eccentric *z*, frame *a'*, and the arm or rod *b'*, as set forth.

4. The plate *f*, provided with upwardly-projecting ears for bending the wire near its ends, and having also a groove at the middle of the surface between said ears, which groove co-operates with a correspondingly-shaped bar to form the eye.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

FREDERICK J. ILSLEY.
AUGUSTINE S. FERNALD.

Witnesses:

H. M. SYLVESTER,
J. P. KERRIGAN.