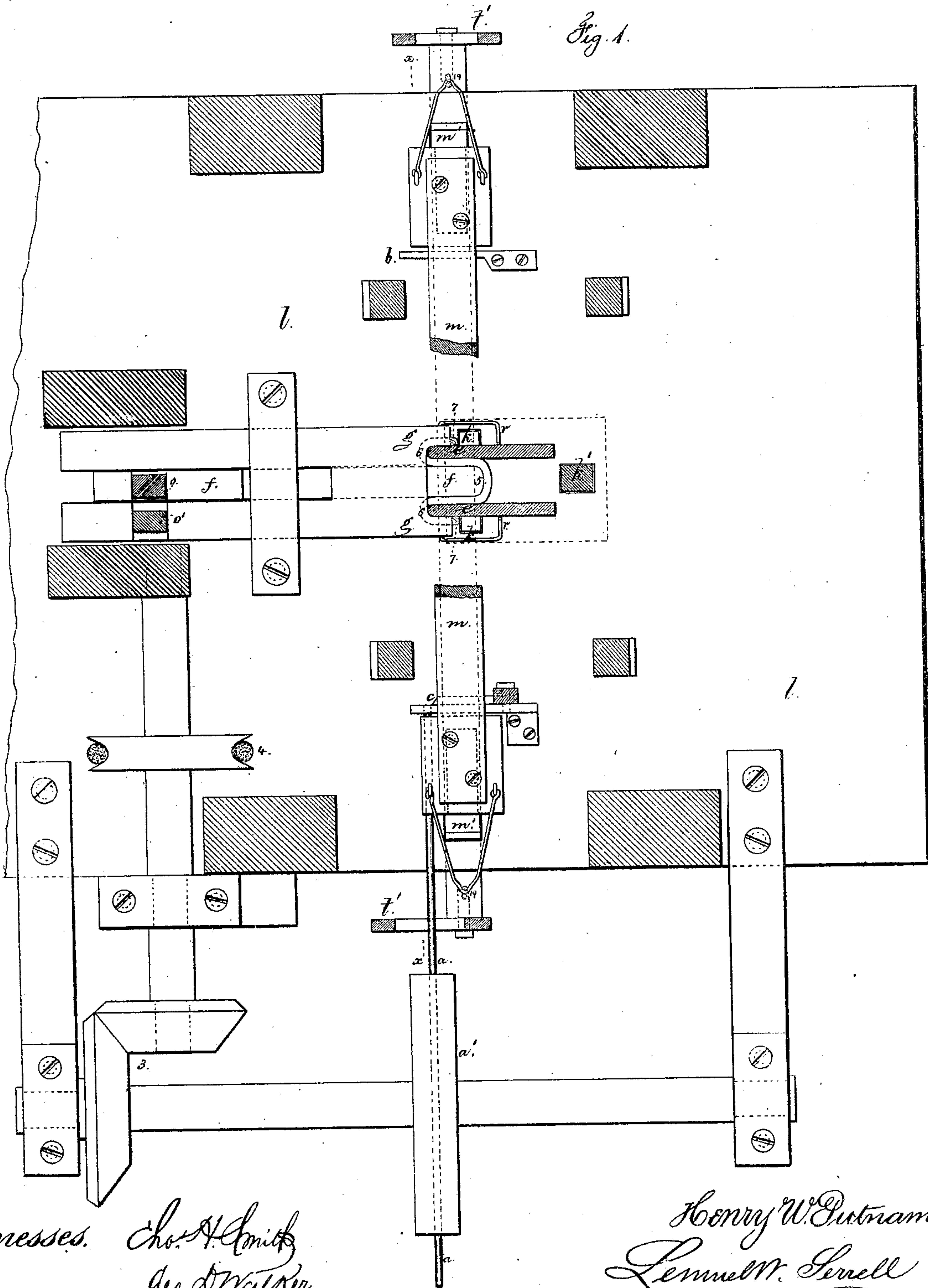


HENRY W. PUTNAM.

Improvement in Machines for Bending Wire Fastenings for Bottle-Stoppers.

No. 115,102.

Patented May 23, 1871.



Witnesses. *Chas. H. Smith*
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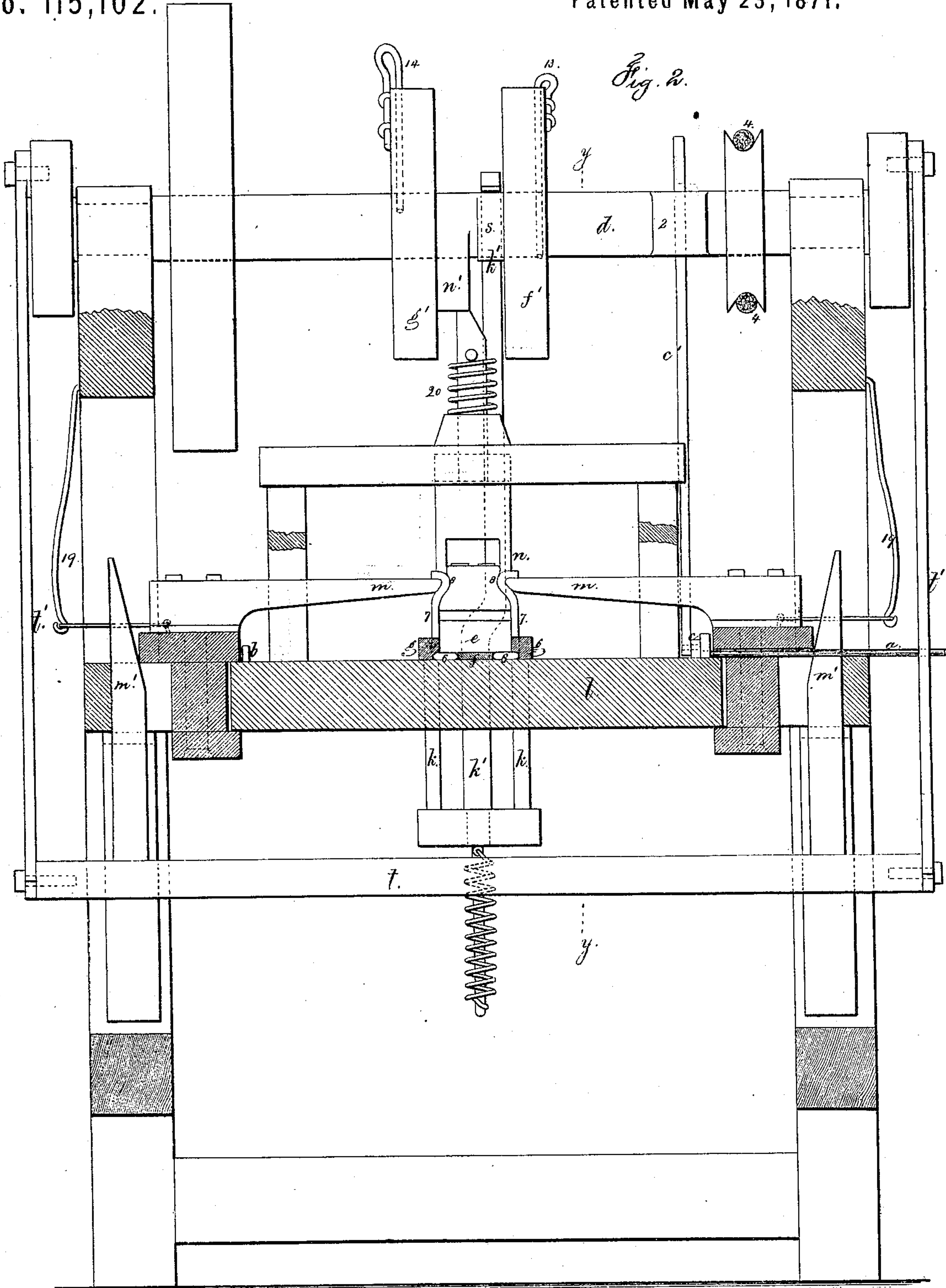
Henry W. Putnam
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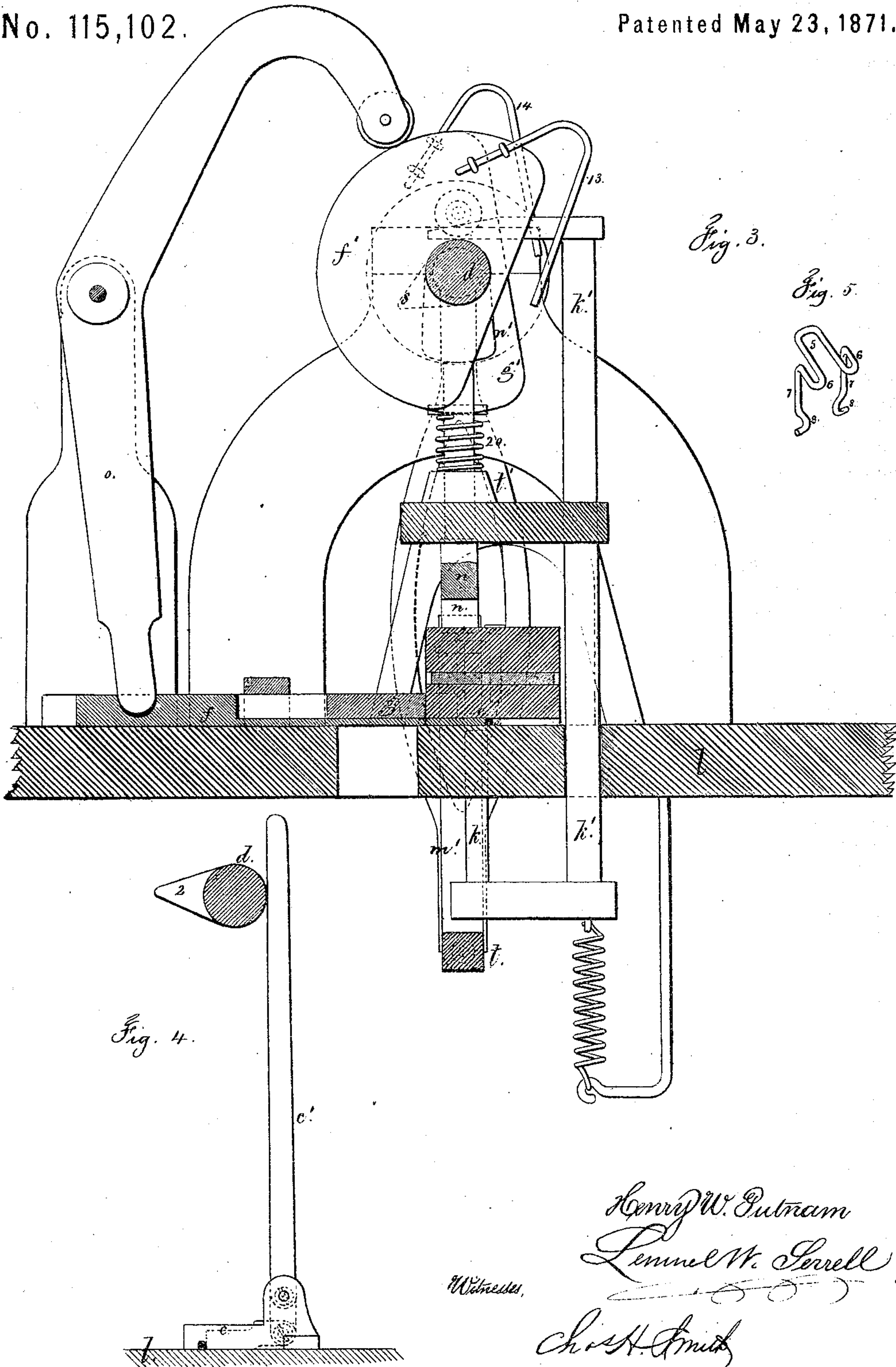
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UNITED STATES PATENT OFFICE.

HENRY W. PUTNAM, OF BENNINGTON, VERMONT.

IMPROVEMENT IN MACHINES FOR BENDING WIRE FASTENINGS FOR BOTTLE-STOPPERS.

Specification forming part of Letters Patent No. 115,102, dated May 23, 1871.

To all whom it may concern:

Be it known that I, HENRY W. PUTNAM, of Bennington, in the county of Bennington and State of Vermont, have invented an Improvement in Machines for Bending Wire Fastenings for Bottle-Stoppers; and the following is declared to be a correct description thereof.

This invention is for bending up the wire and forming fastenings for bottle-stoppers, such as shown in Letters Patent granted to me March 15, 1859; and the present improvement relates to the construction and arrangement of the bending-dies, whereby the operations are performed successively and with great accuracy.

In the drawing, Figure 1 is a sectional plan, showing the bending-dies as closed. Fig. 2 is a sectional elevation at the line *x x*, and Fig. 3 is a similar view at the line *y y*.

The wire *a* is fed into the machine by a pair of rollers, *a'*, and is arrested by the adjustable stop *b*, and cut off by the movable shears *c*, shown also in Fig. 4, the lever-arm *c'* of the shear *c* being operated by a cam, 2, upon the main shaft *d*, that is driven by competent power. By moving the shear and guide different lengths of wire may be cut off. The rollers *a'* are actuated by connecting-gears 3, and a belt or gearing at 4, to the shaft *d*.

The feed-rollers should be made with a sectional elastic surface, to clamp the wire when the feed takes place, the rollers slipping upon the wire at other times.

The dies *e*, *f*, and *g* bend the bow into the compound curved form shown in Fig. 1, the die *f* being first brought up against the wire to press the same into the stationary die *e* and make the central bend 5. Then the two-part or forked die *g* is brought up to bend back the wire against the edges of *e* and form the two bends 6 6. The inner faces of the forked die *g* are grooved to contain the wire, so that a two-part pusher, *k*, acting up through openings in the bed *l*, may bend up the wire around the ends of the fork *g* and at the sides of the die *e*, to make the bends 7 7 in the fastening. (See perspective view, Fig. 5.) The

clamping-dies *m m* are now forced against the wire to bend it near the ends by forcing said wire into recesses at the sides of the die *e*, and then the two-part presser *n* is forced down to complete the bends 8 8 in the fastening and form the projecting pins or hinges, upon which the fastening swings when attached to the bottle by a neck-band or wire.

The dies, punches, and presser before mentioned are moved in the order named, and to effect that motion properly-shaped cams are employed. I have shown cams, slides, and other devices that are adapted to giving these movements, but do not limit myself to the precise construction shown.

The dies *f* and *g* are shown as moved at the right time by the cams *f'* and *g'* acting on the levers *o* and *o'*; and these cams may either be grooved, or else the curved bars 13 14 be employed to act upon the cross-pins at the ends of the levers *o o'*, to return the dies to a normal position.

From the forked die *g* spring-fingers *r* project, to draw the fastener off the die *e* upon its return movement, so that said fastening may fall through a hole in the bed *l*. The two-part pusher *k* is moved by a slide and toe, *k'*, and cam *s*. The clamping-dies *m* are mounted in slides on the bed *l*, and acted upon by wedges *m'*, that are lifted up through openings in the bed *l*, by the cross-head *t* and links *t'*, to cranks upon the ends of the shaft *d*, the return-spring 19 being used to draw the side clamps *m* back. The presser *n* is operated by a cam, *n'*, and lifted by the spring 20.

The parts being properly timed, the dies bend up and complete one of the said bottle-fastenings each revolution of the machine.

The die *e* should be made in two parts, so that the upper part may be raised or lowered, to adapt the machine to fastenings with long or short sides for bottles of different-shaped necks, the parts being kept apart by keys or wedges; and the clamping-dies *m* are also made similarly movable to act properly against the sides of said die *e*.

It is preferable to have the hole in the die

e for the first bend to pass entirely through, to facilitate cleaning or removal of broken pieces of wire; and I remark that the die *e* might be moved, if preferred, instead of being stationary.

I claim as my invention—

The dies *e f g*, pusher *k*, clamping-dies *m*, and presser *n*, arranged and acting substan-

tially as set forth, for bending up wire fastenings for bottles, as set forth.

Signed by me this 30th day of March, A. D. 1871.

HENRY W. PUTNAM.

Witnesses:

GEO. D. WALKER,

GEO. T. PINCKNEY.