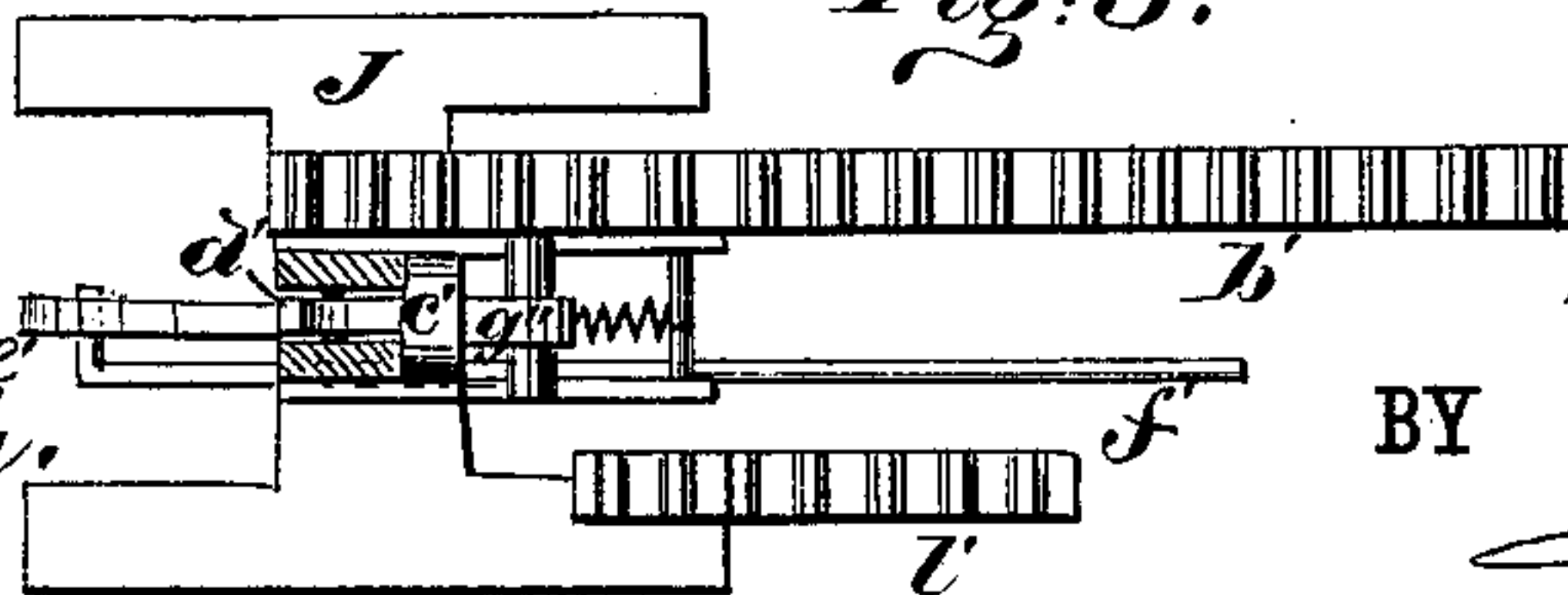
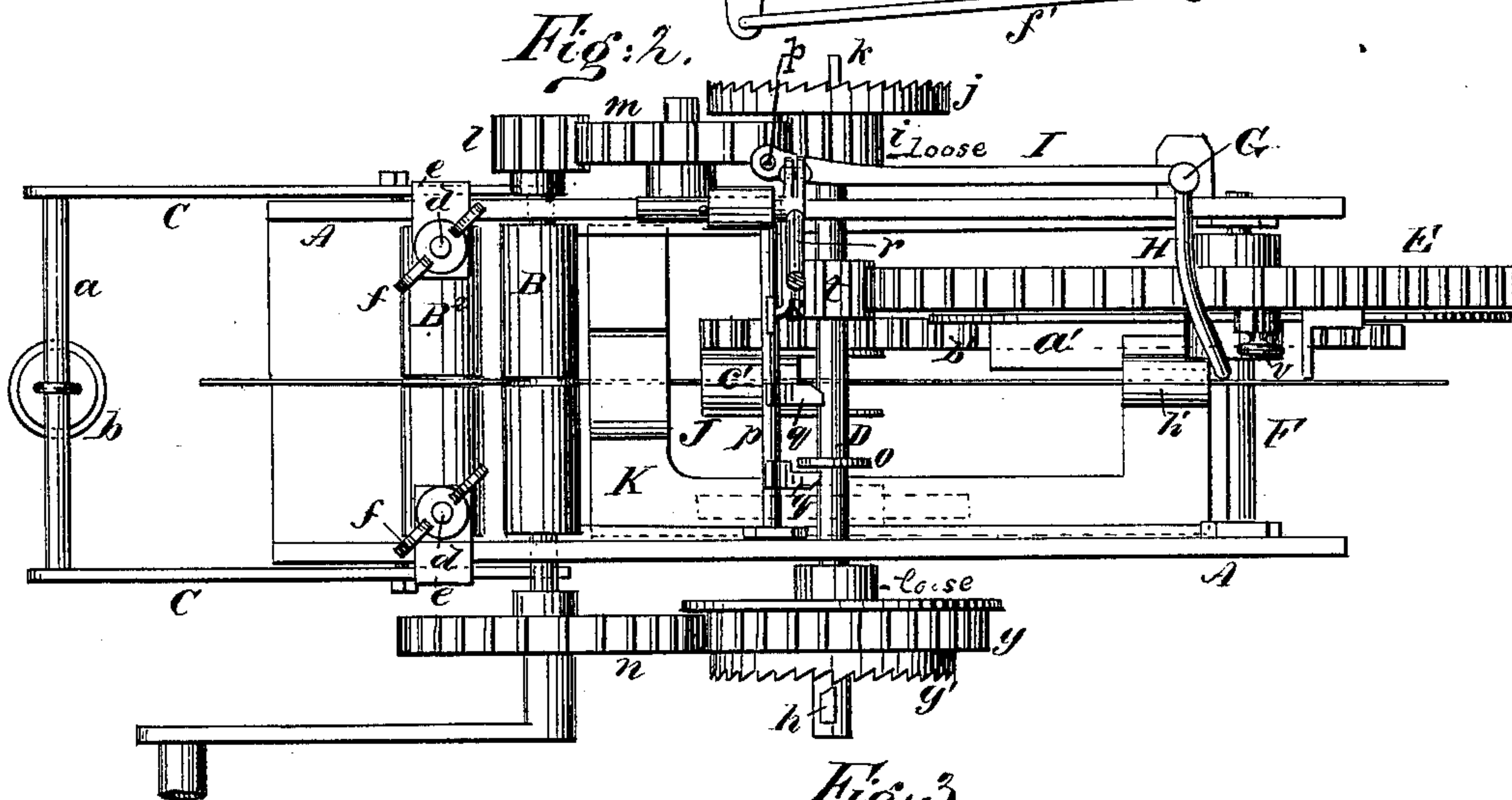
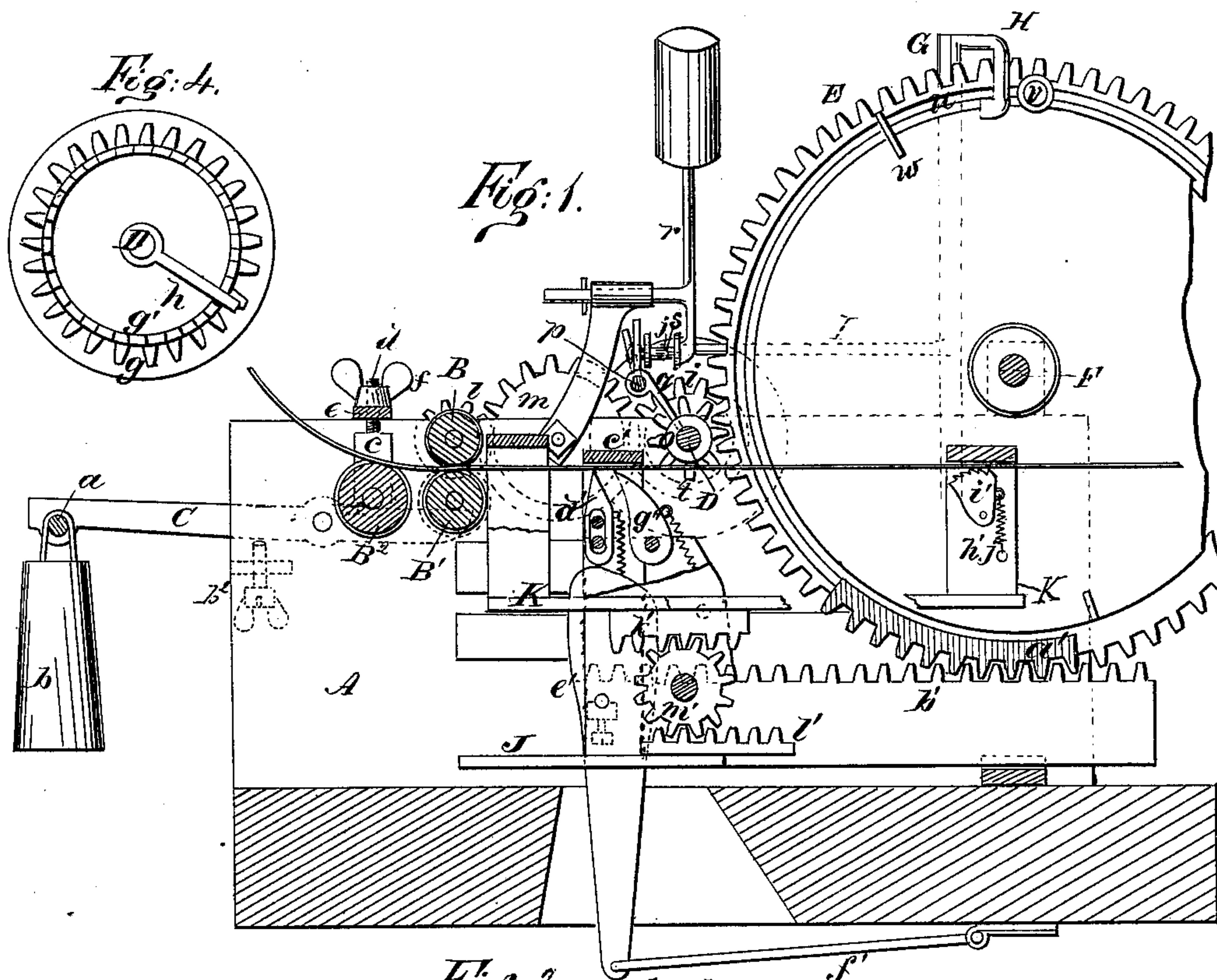


Patented March 5, 1878.



WITNESSES:

INVENTOR:

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ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM E. STEARNS, OF RUTLAND, VERMONT, ASSIGNOR TO HIMSELF AND
JULIA M. SMITH, OF SAME PLACE.

IMPROVEMENT IN WIRE CUTTING AND BENDING MACHINES.

Specification forming part of Letters Patent No. **200,947**, dated March 5, 1878; application filed
October 10, 1877.

To all whom it may concern:

Be it known that I, WILLIAM ELLISON STEARNS, of Rutland, in the county of Rutland and State of Vermont, have invented a new and Improved Machine for Measuring, Bending, and Cutting Wire, of which the following is a specification:

Figure 1 is a longitudinal vertical section. Fig. 2 is a plan view. Figs. 3 and 4 are detail views of portions of the apparatus.

Similar letters of reference indicate corresponding parts.

The object of my invention is to provide a machine for measuring, bending, and cutting wire for the binding of sheet-metal vessels of various descriptions, and to avoid the slow, laborious, and inaccurate process heretofore employed.

The invention consists in the combination of rolls for bending the wire, a feeding device for delivering the wire in proper lengths to the bending-rolls, a cutter, and a clutch for reversing the action of the machine, all as hereinafter fully described.

A is the frame of the machine, and B B¹ B² are grooved rolls that are employed in bending the wire. The shaft of the roll B is journaled in the frame A. The shaft of the roll B¹ is journaled in levers C, which are fulcrumed at the sides of the frame, and are connected at their outer ends by a bar, *a*, upon which hangs the weight *b*, and are limited as to their downward motion by thumb-screws *b*². The roll B² is journaled in the boxes *c*, which are supported by screws *d*, that extend upward through brackets *e*, attached to the sides of the frame A, and are provided with thumb-nuts *f*, by turning which the roll B² may be raised or lowered.

A shaft, D, is journaled in the frame A, and has placed loosely upon one of its ends a spur-wheel, *g*, carrying upon its side a rim, *g'*, having formed in it ratchet-teeth, which are engaged by an arm, *h*, secured to the end of the shaft D. Upon the opposite end of this shaft a pinion, *i*, is loosely placed, to which a ratchet, *j*, having lateral teeth, is secured. An arm, *k*, is secured to this end of the shaft, which is

capable of engaging the ratchet *j*, as the shaft D is moved longitudinally, by mechanism to be presently described.

The pinion *i* is moved by a pinion, *l*, on the shaft of the roll B through the intermediate wheel *m*, which is journaled on a stud projecting from the side of the frame A.

The spur-wheel *g* takes its motion from a similar wheel, *n*, on the shaft of the roll B. It will thus be seen that the wheel *g* and pinion *i* are made to rotate in opposite directions.

Upon the shaft D a collar, *o*, is placed, and above the said shaft there is a sliding rod, *p*, which carries two fingers, *q*, for engaging the collar *o*, there being one finger on each side of the collar. A weighted lever, *r*, is fulcrumed above the sliding rod *p*, and is connected therewith by a link, *s*.

A spur-wheel, E, is placed upon a shaft, F, journaled in the frame A, and is engaged by a pinion, *t*, on the shaft D. In the side of the wheel E there is a groove, *u*, in which is placed an adjustable stud, *v*, and *w* is a fixed stud which projects from the side of the wheel.

A vertical rocking shaft, G, is journaled in brackets projecting from the side of the frame A, and is provided with an arm, H, that extends over the face of the wheel E, and is bent down so as to be engaged by the studs *v w*.

An arm, I, extends from the shaft G to the sliding rod *p*, and is apertured to receive the end of the said rod, which is bent upward at right angles.

A segment, *a'*, is secured to the side of the wheel E, and carries a rack, *b'*, that is attached to a head, J, that moves in suitable guides in the frame A, and carries a double standard, *c'*, the two parts of which are connected together at the top, forming a support for the wire while being cut.

Between the vertical parts of the standard a cutter, *d'*, having a longitudinal slot, is placed on two pins, upon which it slides. It is provided with a spring, which draws it downward and backward, and a lever, *e'*, is pivoted in adjustable boxes in the head J, which has formed upon its upper end a cam for forcing the cutter upward. The lower end

of this lever extends downward, and is connected with a rod, f' , one end of which is pivoted to the frame A.

A dog, g'' , is pivoted in the standard c' , for engaging and carrying forward the wire. This dog is provided with a spring for throwing it up into contact with the wire.

K is a frame that moves in suitable guides in the frame A, and carries a double standard, h' , which is similar to the standard c' . Between the parts of the standard h' a serrated eccentric dog, i' , is pivoted, and is thrown forward against the wire by a spring, j' .

A rack, k' , is attached to the frame K, and takes its motion from a rack, l' , on the head J, through a pinion, m' , that turns on a stud projecting from the side of the frame A.

Wire to be formed and cut is placed over the dog i' and against the cutter d' . The shaft of the roll B being turned in the proper direction to draw the wire between it and the roll B' , with which it is geared, motion is imparted to the shaft D, which turns the spur-wheel E, so that the rack b' is carried forward, taking with it the wire. This movement also carries the frame K backward. When the stud w strikes the arm H the rod p is moved by the arm I until the weight of the lever r passes over the fulcrum of the lever, and by its own gravity moves the rod p still farther, so that the shaft D is moved longitudinally a sufficient distance to throw the arm h out of the ratchet-rim g' and throw the arm k into the ratchet j . The motion of the spur-wheel E is thus reversed, when the rack b' moves back and the frame K moves forward, carrying the wire through the standard c' to the rolls B B' . When the stud v strikes the arm

H the motion of the spur-wheel is again reversed, and the rack b' and head J, carrying the double standard d' , move forward, and when they near the end of their forward stroke the lever e' forces the cutter d' upward, severing the wire. While this operation progresses the frame K moves backward, as before, and the wire is curved by passing in contact with the roll B^2 . The curvature of the wire may be varied by moving the roll B^2 up or down, and the length may be regulated by moving the stud v in the slot u .

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

1. The combination of the frame K, carrying the wire-clamping dog i' , the head J, carrying a wire-cutting device, and mechanism for imparting to frame K and head J reciprocating motion, substantially as herein shown and described.

2. The combination of the lever e' , provided with the rod f' , with the cutter d' , substantially as herein shown and described.

3. The pinion i and wheel g , provided with ratchets, as described, the shaft D, having arms h k and collar o , the rod p , having fingers q , and the weighted lever r , in combination, substantially as herein specified.

4. The combination of the grooved spur-wheel E, having studs v w , shaft G, having arms H I, and the shifting-rod p , substantially as and for the purpose herein shown and described.

WILLIAM ELLISON STEARNS.

Witnesses:

MARY D. STEARNS,
KIRBY W. SMITH.