

(No Model.)

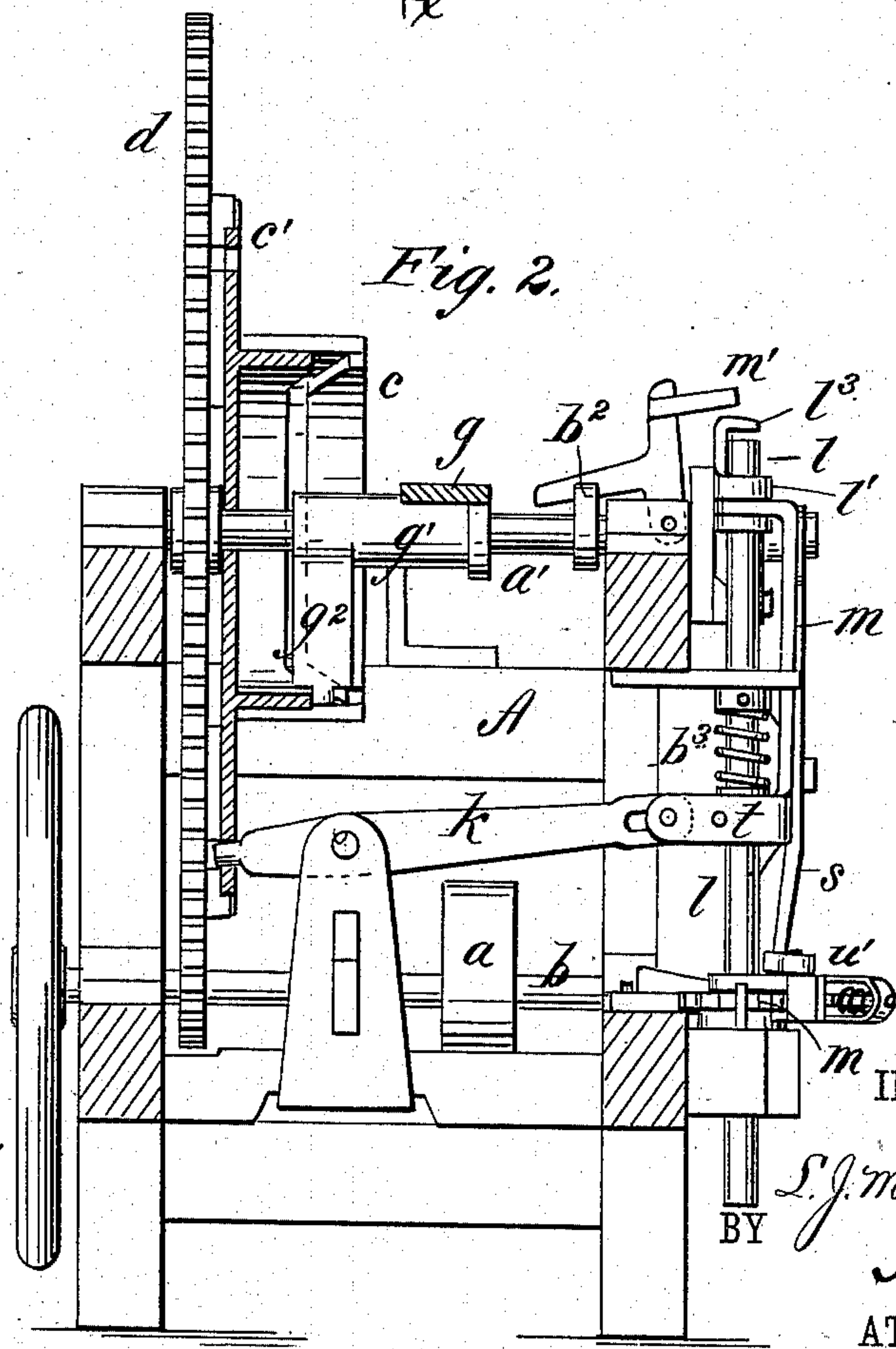
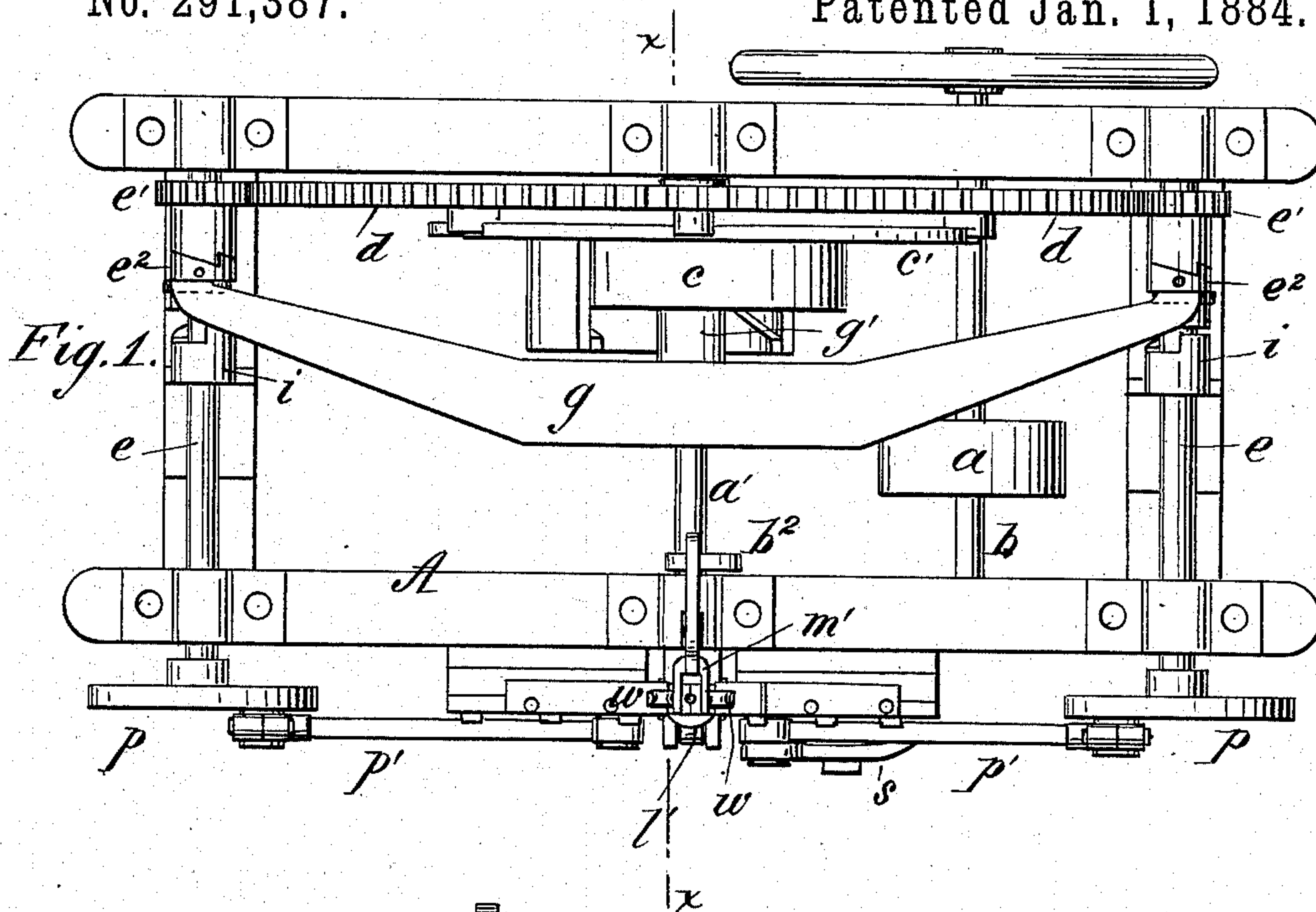
2 Sheets—Sheet 1.

L. J. M. MORTENSON.

MACHINE FOR FORMING EYE BOLTS.

No. 291,387.

Patented Jan. 1, 1884.



WITNESSES:

Dorn Twitchell.
C. Sedgwick

INVENTOR:

BY

L. J. M. Mortenson
Mum & Co
ATTORNEYS.

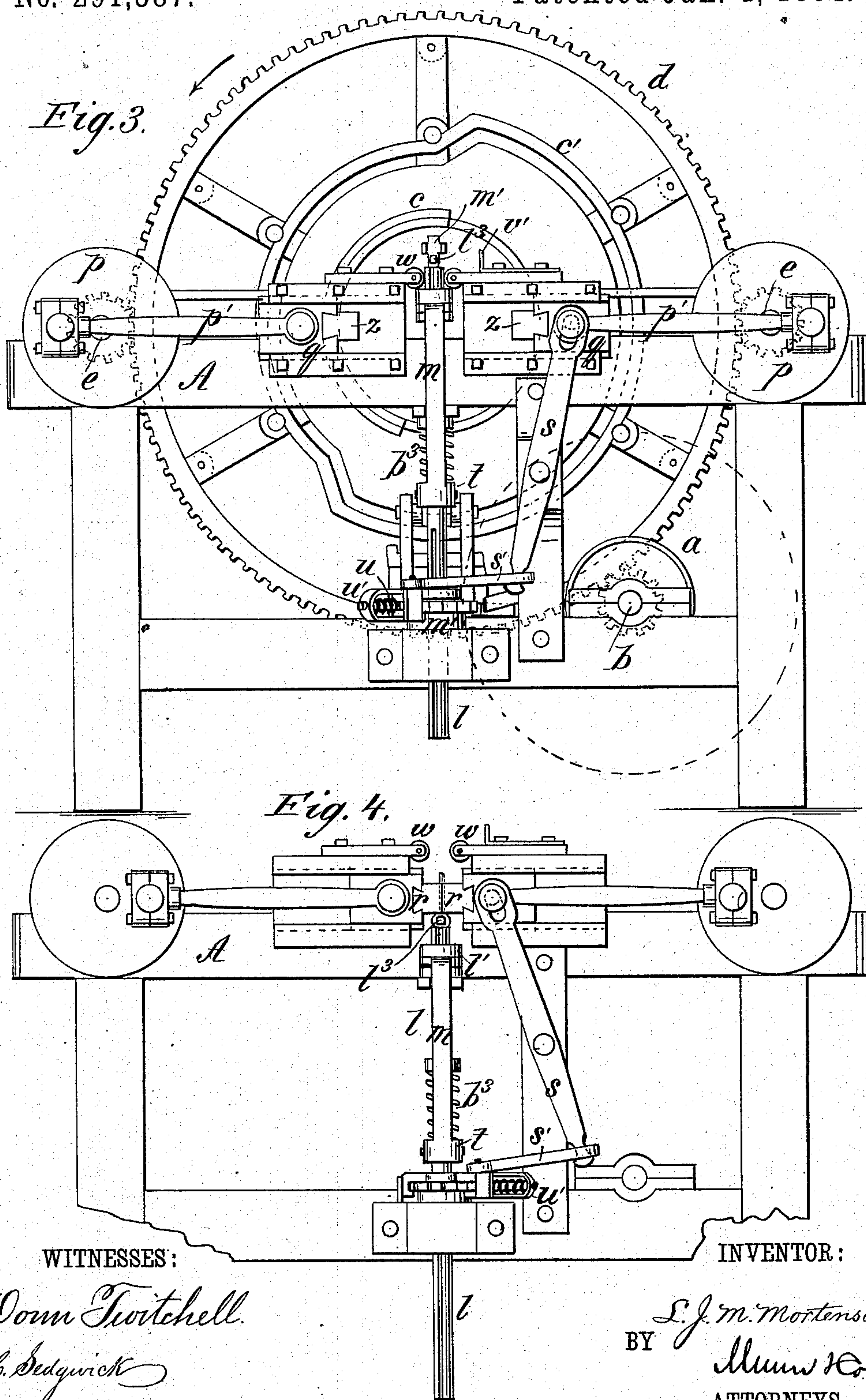
(No Model.)

2 Sheets—Sheet 2.

L. J. M. MORTENSON.
MACHINE FOR FORMING EYE BOLTS.

No. 291,387.

Patented Jan. 1, 1884.



WITNESSES:

Don Twitchell.
C. Sedgwick

INVENTOR:

BY *L. J. M. Mortenson*
Attorneys
ATTORNEYS.

UNITED STATES PATENT OFFICE.

LAURIDS J. M. MORTENSON, OF RACINE, WISCONSIN, ASSIGNOR OF ONE
HALF TO STEPHEN ANDERSEN, OF SAME PLACE.

MACHINE FOR FORMING EYEBOLTS.

SPECIFICATION forming part of Letters Patent No. 291,887, dated January 1, 1884.

Application filed March 29, 1883. (No model.)

To all whom it may concern:

Be it known that I, LAURIDS J. M. MORTENSON, of Racine, in the county of Racine and State of Wisconsin, have invented a new and Improved Machine for Forming Eyebolts, of which the following is a full, clear, and exact description.

The object of this invention is to provide a machine by which a rod can be bent and welded in one heat to form an eye upon it of any desired size or shape.

My invention consists in a combination of mechanism with which the rod to be bent is held firmly at or near its mid-length, the ends then bent upward around the former and welded together by dies, as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the machine. Fig. 2 is a vertical transverse section on the line *x x*, Fig. 1. Fig. 3 is a side elevation, showing the parts in the position they occupy previous to the rod being bent. Fig. 4 is an elevation of the same parts in position after the rod is bent, and with the welding-dies closed.

The frame *A* may be of any suitable construction.

a is a pulley for connection of power on a driving-shaft, *b*, which also carries a balance-wheel.

On the top of the frame is a cross-shaft, *a'*, carrying a large gear-wheel, *d*, that connects to a pinion upon the driving-shaft *b*. The wheel *d* is formed at one side with a boss, *e*, composed of two parts, and forming a cam, and also with a grooved cam-disk, *e'*. At the ends of the frames are cross-shafts *e e*, that carry pinions *e'*, engaging with wheel *d*, and also carrying at their opposite ends crank-wheels *p*, that are connected by rods *p'* to slides *g g*, that are fitted for movement horizontally in suitable slideways at the sides of the frame. The pinions *e'* are attached to their shafts *e* by means of screws entering annular grooves in the shaft, so that they may revolve independently.

g is a T-shaped lever, hung by a hub, *g'*, upon the shaft *a'*, and provided at its ends with yokes that take over clutches *e²* on the shafts *e*, and this lever is also provided on its hub *g'* with a downwardly-extending arm, *g²*, that engages the cam *c*. The clutches *e²* are fitted to the shafts *e*, so as to rotate therewith, but are capable of end movement on the shaft. At the sides of the clutches *e²* are clutches *i*, which are free upon the shafts *e*, but are bolted firmly to the frame *A*.

Beneath the shaft *a'* is a lever, *k*, having one of its ends engaged with the cam *c'* of the wheel *d*, and its outer end extended to the side of the machine for operation of the mechanism next described. *l* and *m* are rods fitted in suitable guides at the sides of the frame, so that they may rise and fall. On the upper end of the rod *l* is a collar-piece, *l'*, connected to the rod in such a manner that the piece may slide thereon, but turn with the rod. On the upper end of the rod *m* is a fork, that fits a groove in the collar *l'*; and on the collar *l'* is a point or former, *l²*, that is bent over the rod *l*. The two rods are connected at the lower end of the rod *m* by a sleeve or yoke, *t*, projecting from rod *m* and loose on rod *l*, the sleeve being connected by a hinge-joint to the outer end of lever *k*. Around rod *l* is a spring, *l³*, resting on sleeve *t* and taking beneath a collar on rod *l*, so that it tends to press rod *m* downward and close the former *l²* upon the rod *l*. Below rod *m* on rod *l* is a ratchet-wheel, *m'*, held by a pin or key entering a key-slot in the rod, and this ratchet-wheel is engaged by a dog, *u*, carried by a holding-arm, *u'*, which is hung loosely on the rod *l*. The arm *u'* is connected by a rod, *s'*, to a lever, *s*, that in turn is connected to one of the slides *g*, for swinging the arm and moving the ratchet-wheel at the outward movement of the slide. By this construction the rods *l m* are moved up and down by lever *k*, the upward movement of rod *l* being limited by a stop just before the lever *k* completes its rise, so that the former *l²* is raised to give space for insertion of the rod to be bent, and the spring *l³* closes the former upon the rod *l* at the first downward movement.

Upon the slides *g* are dies *r r*. The gear-

wheels e' on the shafts e are formed with projections for engagement with the clutches e^2 , which are similarly formed with projections on both sides, one side for engaging the pinions e' and the other for engagement with the fixed clutches i , so that when the clutches e^2 are thrown into engagement with the pinions e' the crank-disks p are caused to revolve, but when the clutches are moved into engagement with the fixed clutches i the shafts e , and consequently the crank-disks p , are stopped. These clutching movements are obtained by movement of the lever g , operated by the cam c' on the wheel d . The gearing is proportioned to give a proper number of revolutions to the crank-disks to one of the wheels d , the arrangement being such that the disks remain stationary during a portion of the revolution of the wheel d , the object being to obtain a complete operation at each revolution of the large wheel.

In the operation of the machine the wheel d moves in the direction of the arrow. Fig. 3 shows the position of rest, the wheel d and the pinions e' being, however, in revolution. This rest is in order to give time for the rod to be removed from the furnace and placed in the space between the upper end of the rod l and the projection or former l^b , the rod resting upon the fixed or adjustable supports w , and taking against a gage, v' . The cam c' then operates the lever k to move the rod l downward, causing the projection l^b to lock upon the rod before the rod l moves downward with the lever, and the iron, being thus firmly held, is pulled down between the supports w , thereby becoming bent around the projection l^b . As soon as the rods l m reach the position shown in Fig. 4 they stop; but the clutches e^2 having now engaged with the pinions e' , the shaft e and the crank-disk p are rotated, so that the slides g and dies r are

forced inward upon the bent rod and weld the ends together. As soon as the dies r separate, the lever s , acting through the connection s' and dog u , turns the rod l and the piece l' , with the eyebolt, a quarter-turn. The dies then come together again, and the eyebolt thus receives a blow for each quarter-turn. The lever g then acts to effect the locking of the clutches e^2 with the fixed clutches i , thereby stopping the crank-disks p . The lever k then moves the rods l m upward, and a cam, b^2 , on shaft a' , acting upon a pivoted fork, m' , throws the eyebolt from the former. The machine is now ready to receive another rod for welding.

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

1. The combination of the rod l , provided with the piece l' , having the projection or former l^b , the rod m , and the slides g , carrying welding-dies r , substantially as described, for operation in holding, bending, and welding a heated rod to form an eyebolt.

2. In machines for welding eyebolts, the combination of the mechanism, substantially as described, consisting of an endwise-moving rod and a former, between which the rod to be welded is clamped, supports for holding the rod while being bent, and reciprocating dies for welding the rod after being bent, so as to bend and weld an eyebolt at one heat.

3. The combination, with the rod l , having former l^b , of the supports w , the gage v' , the cam c' , and the lever k , whereby the rod may be bent around the former, as described.

4. The combination, with the rod l , of the lever s , connection s' , and dog u , to give a quarter-turn to the rod, as described.

LAURIDS J. M. MORTENSON.

Witnesses:

STEPHEN ANDERSEN,
ROBERT L. JOHNSON.