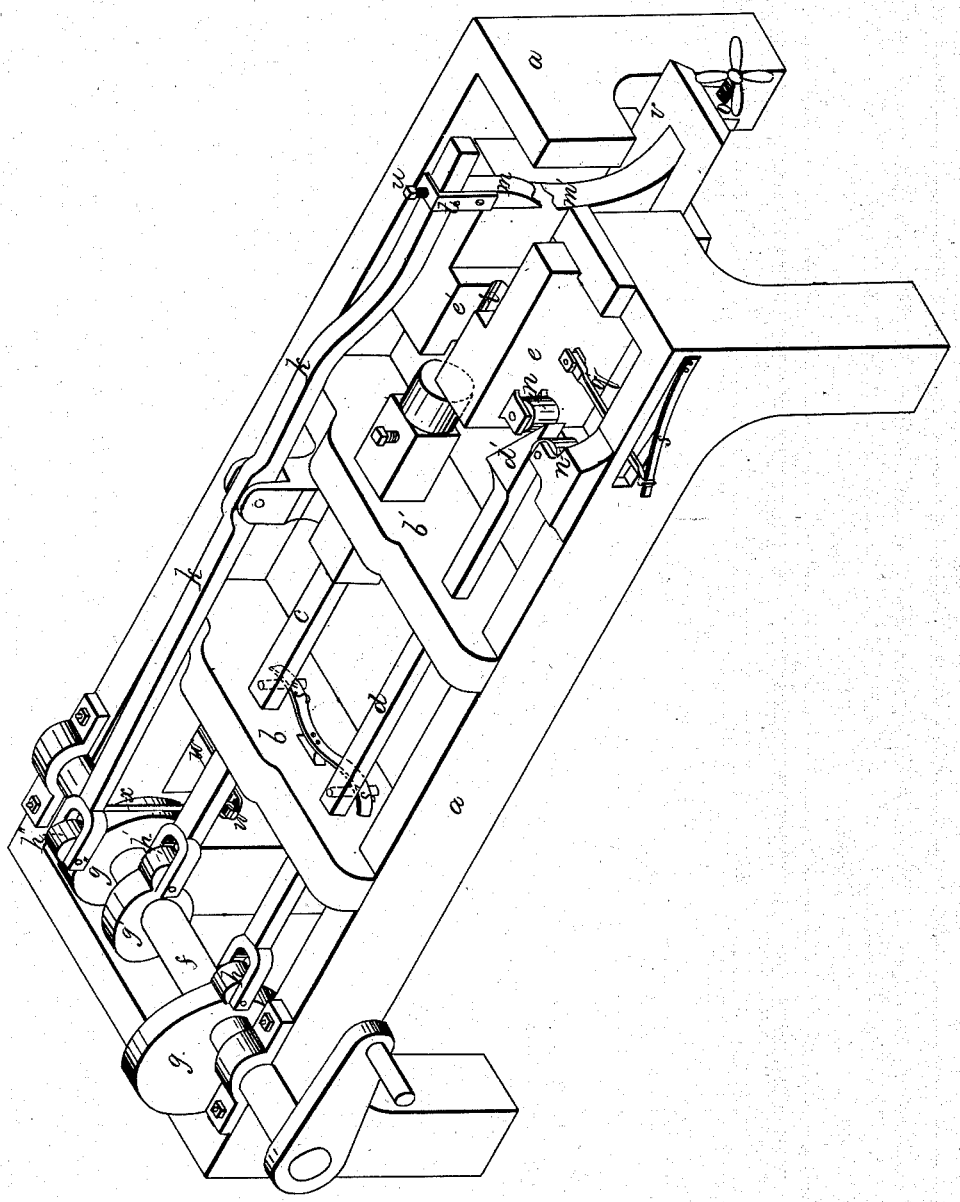
E. Kaylor.

Making Bolts.

No. 49,532. Patented Aug. 22, 1865.



Witnesses.
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UNITED STATES PATENT OFFICE.

EDWARD KAYLOR, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN BOLT-MACHINES.

Specification forming part of Letters Patent No. **49,532**, dated August 22, 1865.

To all whom it may concern:

Be it known that I, EDWARD KAYLOR, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Bolt-Machines; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawing, forming part of this specification, which is a perspective representation of my improved machine.

To enable others skilled in the art to construct and use my improved bolt-machine, I will proceed to describe its construction and operation.

In the drawing, *a* is a strong rectangular frame supporting the machinery. *b b'* are two cross-pieces, which serve as supports and bearings for the header-arm *c* and the wedge-arm *d*, by which the die *e* is advanced to hold and shape the shank of the bolt in the cavity *i*, formed by the closing of the dies *e* and *e'*.

At the rear end of the machine is a transverse horizontal cam-shaft, *f*, from the revolution of which motion is communicated to all parts of the machine. On this cam-shaft *f* are three eccentric-cams, *g g' g²*, on the periphery of each of which rests a roller, *h h' h''*, one of which is placed in a fork at the rear end of the wedge-arm *d*, the header-shaft *c*, and cutter-lever *k*, respectively. As represented in the drawing, each of these rollers *h h' h''* touches its cam at the point of its circumference nearest to the center of the shaft, so that the die *e* is open, the header *l* is drawn back, and the cutter *m* is raised, and so that any further motion of the main shaft *f* and its attached cams *g g' g''* would cause the die *e* to move toward the stationary die *e'*, the header *l* to advance, and the movable cutter *m* to descend toward the stationary cutter *m'*.

The die *e* slides in bearings in the frame with a horizontal movement parallel to the face of the stationary die *e'* and to the axis of the header *l*, this motion being effected by means of the wedge-shaped head *d'* of the shaft *d*, which passes between a pair of friction-rollers, *n n*, one attached to the frame of the machine and the other to the side of the movable die *e*. The return motion of the die *e*, when the wedge *d'* is withdrawn, is caused by the spring *s* and rod *q*. The axis of the header *l* is in the same horizontal line as the center of the cavity *i* in the stationary die *e*, and the motion of the header is in that axial line.

The cutter-lever *k* has its fulcrum in the standard *p*, and near the forward end of the lever is the cutter *m*, which depends perpendicularly from the lever *k*, on which it slides by means of the loop *t*, and on which it is set in the required position by the set-screw *u*. The lower cutter, *m'*, rises perpendicularly from a slide, *v*, which works in grooves in the frame of the machine, so that it can be slid in or out toward or from the front end of the die *e'*. It is set in any required position by a screw, *o*, or by a key hidden from view in the drawing. The cutters *m m'* are directly in front of the cavity of the dies *e e'* when closed, and the top of the stationary cutter is in front of the axial line, or a little below it, so that by the descent of the upper cutter, *m*, which is set so as to graze the lower cutter in passing it, the rod from which the bolts are made is severed as by a pair of shears. The cutters *m m'* are adjusted to the required distance from the end of the dies to make the bolt of any desired length without alteration of the dies.

As the cams *g g'* cause the shafts *d* and *c* to advance to close the dies and press the header *l* against the rear end of the dies without drawing them back again, the return motion is effected by the springs *s' s''*, and the roller *h''* on the lever *k* is kept down on the circumference of its cam *g''* by the spring *w*, or by a weight.

The operation of my machine is as follows: The cutters *m m'* are adjusted at a distance from the rear end of the dies *e e'* equal to the required length of the bolt when finished. The rod from which the bolt is to be made, being first heated, is inserted into the machine over the top of the lower cutter, *m'*, a curved indentation, *v*, on which serves to guide the rod and keep it in place. The rod is passed between the dies through the cavity *i* in the stationary die *e'* until the extremity of the rod touches the end of the header *l*, which serves as a stop. The dies are then closed by the advance of the movable die *e*, which gripes the rod, holding it firmly, while the header advances and presses the protruding part of the rod into the enlarged cavity in the dies made to shape the head, and and at the same time the upper cutter, *m*, de-

scends and severs the rod. The header then draws back, the dies open, and the upper cutter is raised, the finished bolt drops down, and the machine is ready for a repetition of the operation.

The advantages of my machine are its simplicity of construction, the direct action of all the parts, and the facility for making bolts of varying length merely by adjusting the cutters without any alteration of the dies.

What I claim as my invention, and desire to secure by Letters Patent, is—

The use, in bolt-machines, of the detached cutters *m m'*, placed in front of and susceptible of adjustment to and from the face of the griping-dies, in combination with the screw *o* and slide *v*, for adjusting the lower cutter, and the lever *k* and loop *t*, for operating and adjusting the upper cutter, substantially as described, for the purpose of cutting off the blank to make any desired length of bolt without requiring any change of the dies.

In testimony whereof I, the said EDWARD KAYLOR, have hereunto set my hand.

EDWARD KAYLOR.

Witnesses:

W. BAKEWELL,

THOS. OWSTON.