

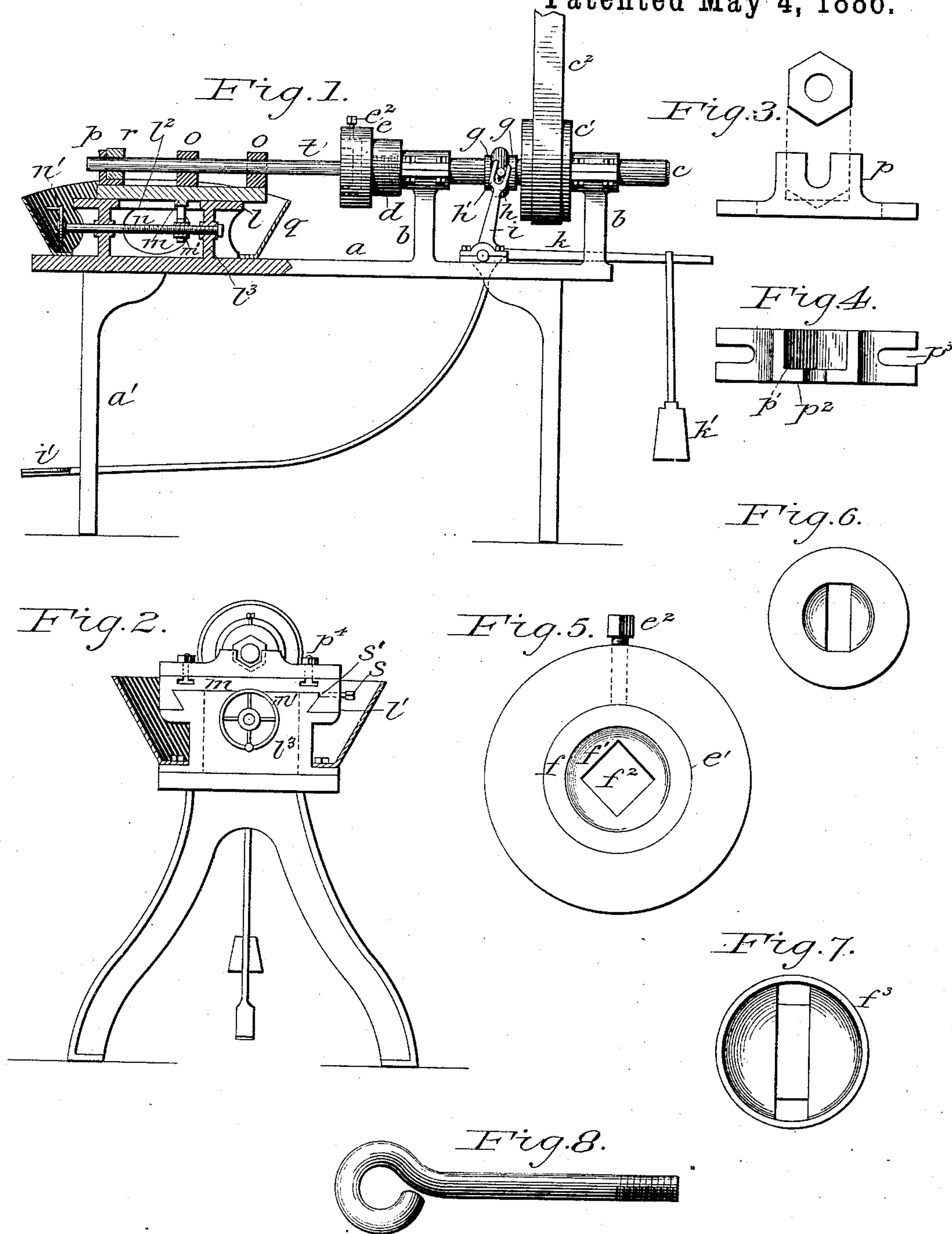
(No Model.)

W. SHANNON.

BOLT NUTTING MACHINE.

No. 341,174.

Patented May 4, 1886.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

WILLIAM SHANNON, OF BEAVER FALLS, PENNSYLVANIA.

## BOLT-NUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 341,174, dated May 4, 1886.

Application filed October 12, 1885. Serial No. 179,703. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM SHANNON, of Beaver Falls, in the county of Beaver and State of Pennsylvania, have invented a new and useful Improvement in Bolt-Nutting Machines; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of my improved bolt-nutting machine. Fig. 2 is an end view. Figs. 3 and 4 are side and plan views of the nut-holder. Fig. 5 is a face view of the chuck. Figs. 6 and 7 are views of other forms of bits to be used with the chuck. Fig. 8 is a view of the bolt used with the bit shown in Fig. 7.

Like letters of reference indicate like parts in each.

The purpose of my machine is to secure the rapid and easy screwing on of nuts on bolts before the latter are sent out of the factory in which they are formed. To this end I have constructed the following machine:

Mounted in bearings *b* upon a bed-plate, *a*, is a revolving shaft, *c*, to which power is applied by means of a pulley, *c'*, and belt *c''*. On the end of the shaft *c* is a head, *d*, to which is attached a chuck, *e*, having a suitable recess or cavity, *e'*, in the front side for the reception of a bit, *f*, which is secured therein by means of a set-screw, *e''*, extending through the side of the chuck and entering the cavity *e'*. Upon the shaft *c* are collars *g*, between which is placed a ring, *h*, having pins *h'* projecting from the sides. Pivoted to the bed-plate *a*, beneath the collars *g*, is a lever, *i*, the short arm of which extends upward to the shaft *c*, where it is bifurcated and receives the pins in recesses formed in the bifurcated arms. The long arm of the lever is bent and extends forward beyond the front legs, *a'*, of the bed, where it stands above the floor, so as to form a foot-treadle, as at *i'*. Rigidly attached to the lever *i* at its pivotal point is a rod or arm, *k*, attached to the end of which is a weight, *k'*. The purpose of the lever *i*, with its treadle *i'*, is to throw the shaft *c* forward by a longitudinal movement on its bearings *b*, the short arm of the lever bearing against the pins *h'*. When the foot is removed from the treadle *i'*,

the weighted rod or arm *k* restores it to its original position and draws back the shaft *c*. On the front end of the bed-plate *a* is a stand, *l*, which is either fastened to the bed-plate or forms a part of the same. Extending longitudinally of its sides it has ways *l'*, upon which is a sliding frame, *m*, having a downwardly-projecting nut, *m'*, rigidly secured thereto and extending downward through a slot, *l''*, in the stand *l*. In the supports *l''* of the stand *l* are holes, through which a screw-stem, *n*, extends. The screw *n* is provided with a hand wheel or crank, *n'*, and passes through the supports *l''* and nut *m'*, so that when turned it shall cause the frame *m* to slide back and forth upon the ways *l'*. Upon the upper surface of the frame *m* are two bolt-rod supports, *o*, and a nut-holder, *p*, has a recess, *p'*, for receiving the nut, such recess being of the same shape as the outside of the nut, and a slotted web or side, *p''*. It has also bolt holes or recesses *p'''*, by which it is fastened to the frame *m*. Fastened to the bed-plate *a*, around the stand *l*, is a sheet-metal pan, *q*, which is designed to catch the oil-drippings from the nut-holder. The bit *f*, which is secured in the chuck *e*, has a concave face, *f'*, in the bottom of which is a recess or hole, *f''*, which is of the same shape as the head of the bolt to be nutted.

If the bolt-head is formed by bending the rod over, as is shown in Fig. 8, the recess *f''* is of rectangular shape, as shown in Figs. 6 and 7, and may be made with flaring ends, as at *f'''*, Fig. 7.

The operation of my improvement is as follows: The machine being in the position shown in Fig. 1, with the shaft *c* rotating, the bolt is laid in the guides *o*, and then pushed back until its head comes against the concave surface of the bit *f*, against which it is pressed until the rotation of the chuck causes the recess *f''* to coincide with the shape of the head, when the bolt-head will slip into the recess and the motion of the rotating chuck will be imparted to the bolt. A nut, *r*, is then placed in the holder *p* and is held by the holder in a fixed position. The workman then places his foot on the treadle *i'*, and presses the rotating bolt-rod *t* forward against the nut in the holder *p*. The rotation of the bolt *t* causes it to be screwed into the nut, and when screwed a suf-



5 sufficient distance the workman removes his foot from the treadle *i'* and permits the weight *k'* to throw the lever *i* back to its original position, and thereby draws the rotating shaft *c*, with its chuck *e*, away from the bolt-head. The workman then removes the threaded bolt from the machine, inserts another bolt and nut therein, and repeats the operation just described.

10 The frame *m*, being adjustable, as before described, by means of the screw *n*, may be fixed in any desired position by means of a set-screw, *s*, passing through it and biting against a straight surface, *s'*, on the stand *l*.

15 I do not limit myself to the precise form of nut-holder shown, as the same may be varied, it being only necessary to have a holder which is capable of holding the nut in a fixed position in front of the bolt and of permitting the end of the bolt to pass through it. It must also for practical purposes be a holder which
 20 permits the easy insertion and removal of the nut.

25 The shape of the recess or cavity *p'* is made to conform to the shape of the nut with which it is used, and as the machine is designed for use with nuts of different shapes the holder is removable by simply taking off the nuts *p'*. The shape of the bits *f*, with their concave portion, enables me to effect the easy insertion
 30 of the bolt-heads into the recess *f'* without stopping the machine. The grooved guides *o* hold the bolt-rod in perfect alignment with the chuck *e* and nut-holder *p*, and enable me to bring the bolt instantly into position.

35 The construction of my machine is cheap and simple. It is easy and efficient in operation, and enables me to effect a large saving of time and labor in the nutting of the bolts.

40 The shape of the cavity *f'* of the bits *f* may be made to conform to the shape of the heads of the bolts to be nutted, whether of polygonal, T, oval, or other form, and as the machine is

designed for use with different kinds of bolts, the bits *f* are made interchangeable, so that the form capable of engaging the head of the bolt to be nutted may be inserted into the machine to be used therewith.
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A spring may be used instead of the weight for retracting the chuck.

What I claim as my invention, and desire to secure by Letters Patent, is—
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1. In a bolt-nutting machine, the combination of a rotating bolt holder or carrier capable of an axial movement, a nut-holder arranged in line therewith, and a bolt support or guide arranged between the nut-holder and bolt-carrier to insure the alignment of the bolt, substantially as and for the purposes specified.
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2. In a bolt-nutting machine having a nut-holder and a rotating bolt-carrier, a bit for receiving the bolt-head, said bit having a polygonal opening or recess for the reception of the bolt-head and concave guide-faces leading thereto, whereby the bolt may be entered in the bit without arresting the revolution of the carrier, substantially as and for the purposes specified.
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3. The combination of the fixed nut-holder having bolt-supports *o o* in line therewith, the rotating bolt-carrier capable of an axial movement, and the lever *i*, treadle *i'*, and weighted arm *k'*, substantially as and for the purposes specified.
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4. The combination, in a bolt-nutting machine, of a rotating chuck capable of an axial movement, with an adjustable sliding frame having bolt-supporters and a nut-holder, substantially as and for the purposes specified.
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In testimony whereof I have hereunto set my hand this 26th day of September, A. D. 1885.

WILLIAM SHANNON.

Witnesses:

W. B. CORWIN,  
 THOMAS B. KERR.