Wm B. Bement

Bolt Threading Machine

No. 75239 Patented March 10. 1868

Fig. 1.

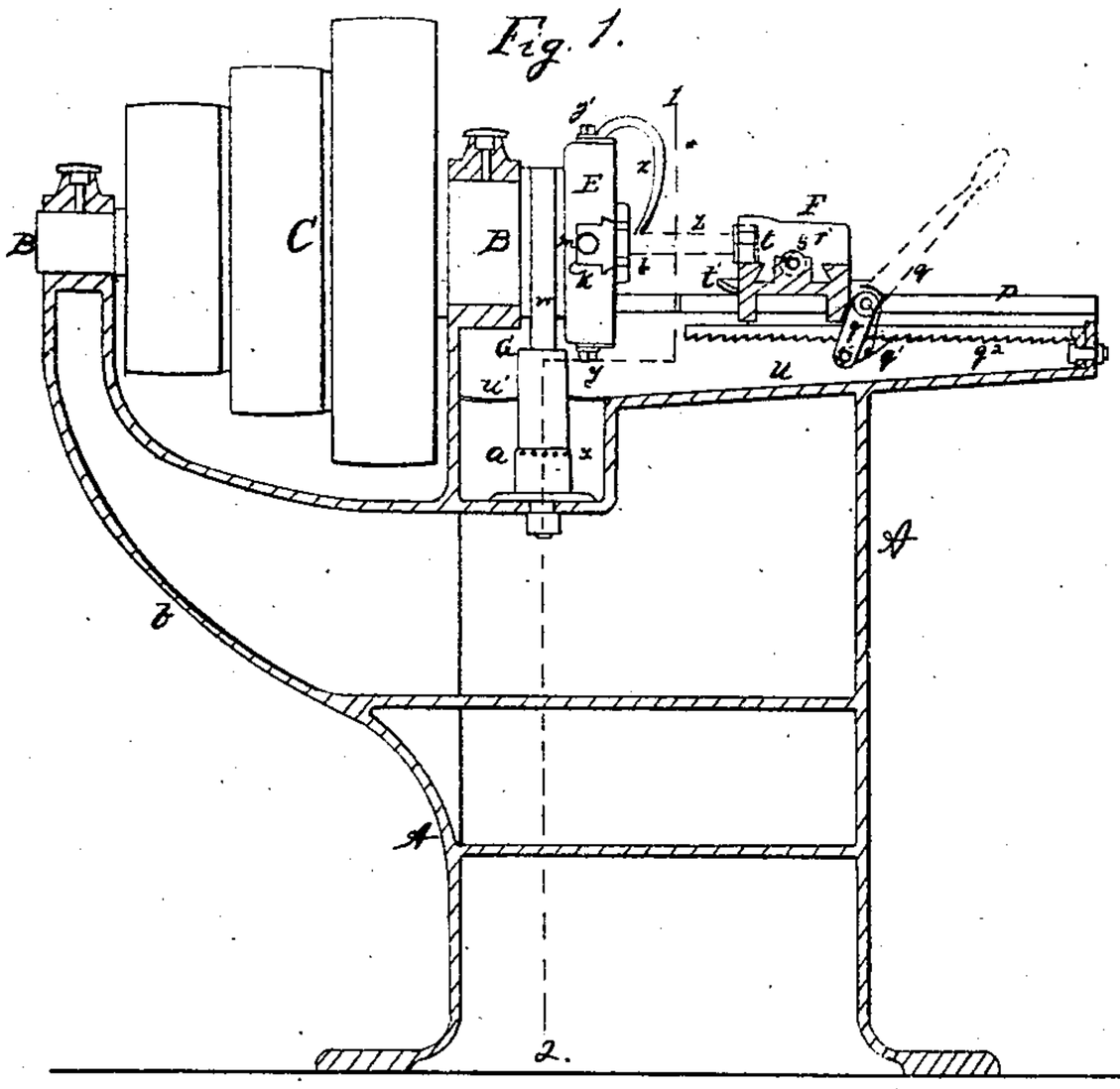


Fig. 2.

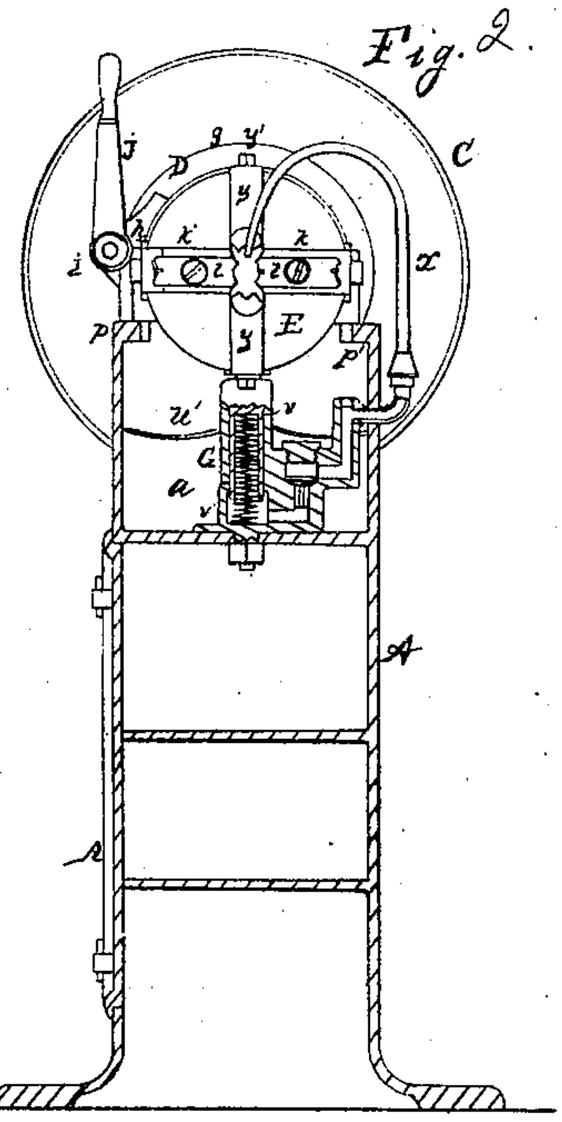


Fig. 3.

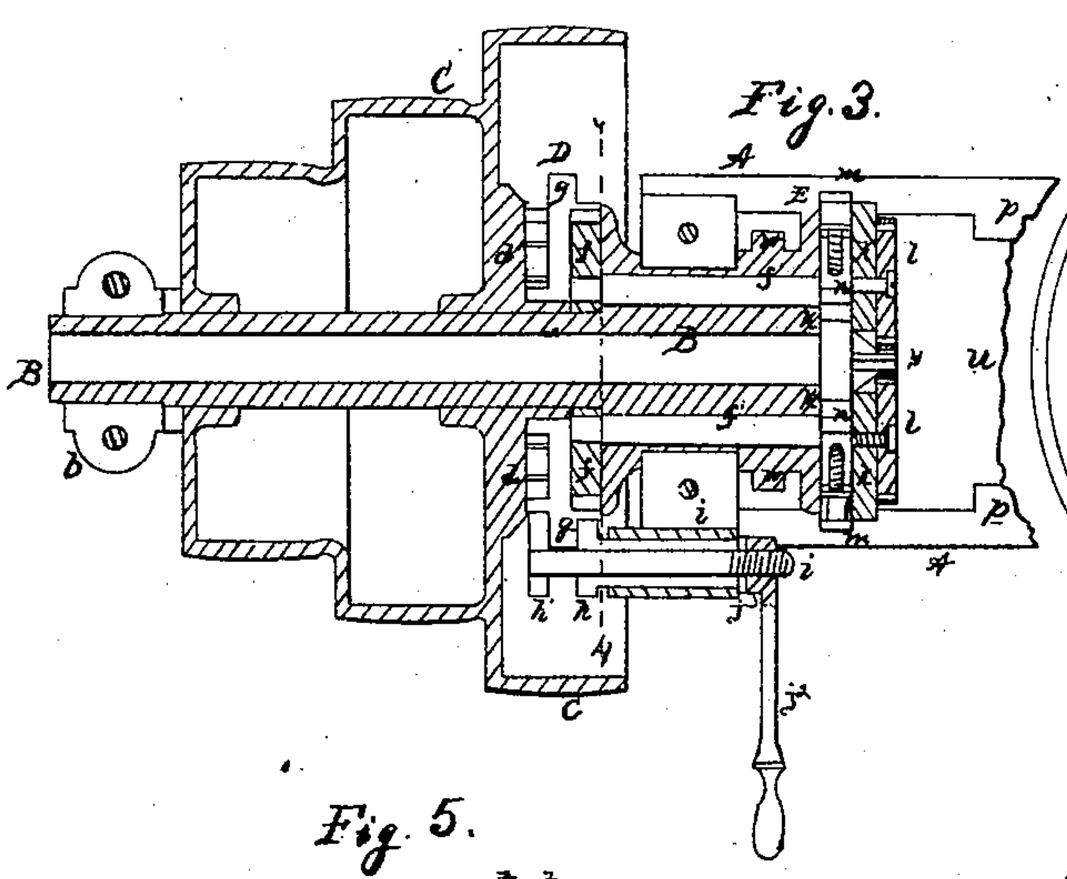


Fig. 4.

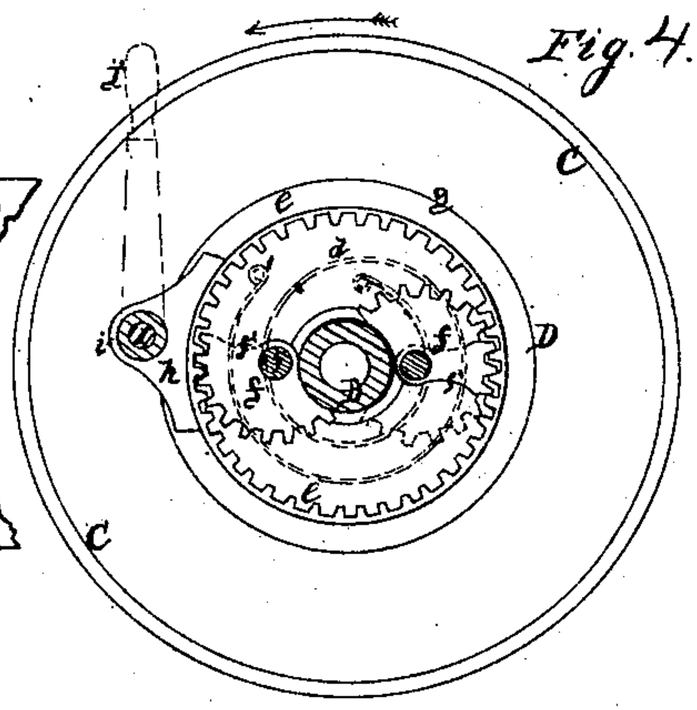


Fig. 5.

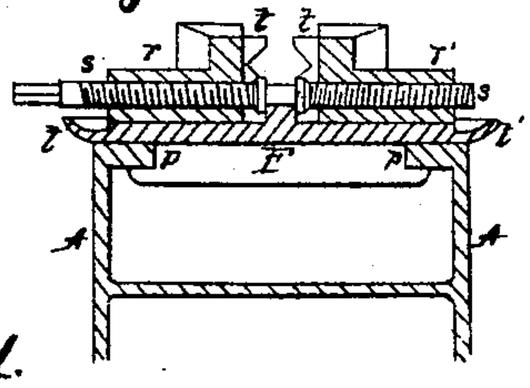
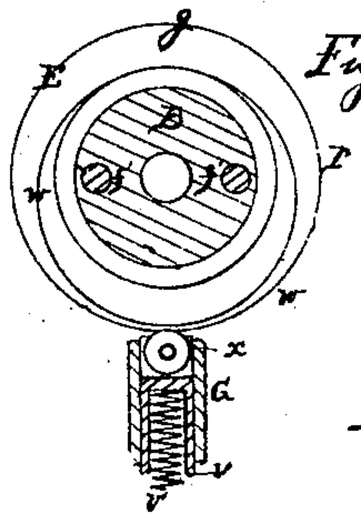


Fig. 6



Witnesses.

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Letters Patent No. 75,239, *dated March* 10, 1868.

IMPROVEMENT IN BOLT-THREADING MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM B. BEMENT, of Philadelphia, Pennsylvania, have invented an Improved Bolt and Nut-Threading Machine; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention consists, first, of mechanism described hereafter, for opening and closing the dies while the machine is in motion; second, in cutting dies secured to sliding blocks, but admitting of an adjustment independent of the same, as explained hereafter; third, of an automatic oiling-apparatus; fourth, of mechanism described hereafter, for operating the sliding head or plate, which carries the jaws for holding the nuts.

In order to enable others familiar with machinery of this class to make and use my invention, I will now proceed to describe its construction and operation, reference being had to the accompanying drawing, which forms a part of this specification, and in which—

Figure 1 is a sectional elevation of my improved bolt and nut-threading machine.

Figure 2, a transverse section of the same, on the line 1–2, fig. 1.

Figure 3, a sectional plan on the line 5–6, fig. 1, of a portion of the machine drawn to an enlarged scale.

Figure 4, a transverse section on the line 3–4, fig. 3; and

Figures 5 and 6, detached views, also enlarged, of portions of the machine.

Similar letters refer to similar parts throughout the several views.

A is the hollow cast-iron frame of the machine, having suitable bearings, in which, and in an arm, *b*, projecting from the frame, turn the journals of a hollow spindle, B, and to this spindle is secured an ordinary cone-pulley, C, in place of which gearing may be used when the machine is of the larger class.

A disk, D, is fitted snugly, but so as to turn freely on the spindle B, its independent motion being limited by a coiled spring, *d*, contained in a recess in the rear side of the disk, (fig. 3,) one end of the said spring being secured to the spindle, while the opposite end is secured to the disk, (see dotted lines in fig. 4.) At the front side of the disk D is an internal cog-wheel, *e*, into which gear toothed-segments *f f*, the latter being secured to spindles *f'*, which pass longitudinally through and turn in a portion of the spindle B, (see fig. 3.)

A flange, *g*, extends around and forms a part of the disk D, and is situated between friction-brakes *h* and *h'*, which are curved to conform to the shape of the disk, as shown in fig. 3. The brake *h* is secured to a sleeve, *i*, which passes through and is supported by a projecting portion of the frame of the machine, and the brake *h'* is secured to a spindle, *j*, which passes through the said sleeve. A left-handed screw-thread is cut on the outer end of the spindle *j*, for receiving a nut, j^1, which bears against the sleeve *i*, and is provided with a suitable handle, j^2, (fig. 3.)

When the handle is in the vertical position shown by dotted lines, fig. 4, the brakes *h* and *h'* do not bear against the flange *g* of the loose disk E, which is therefore free to turn with the spindle B, but on turning the handle j^2 to the horizontal position shown in fig. 3, the brakes are drawn towards each other, so as to gripe the flange of the loose disk, and arrest the motion of the latter. When the disk is thus held, the segments *f* and their spindles f^1 are turned, until their curved edges f^2 bear against the spindle B, as shown in dotted lines, fig. 4, when the friction of the brakes *h* and *h'* will be overcome, and the disk will necessarily turn with its spindle. If the handle j^2 be now turned to its original vertical position, the disk D, freed from the action of the brakes, will by the action of its coiled spring *d*, return to its former position, and the segments *f* will again assume the position shown in fig. 4.

At the front end of the spindle B is an enlargement or head, E, in which are formed grooves at right angles to each other, as shown in fig. 2. In one of these grooves, which is partly dove-tailed and partly straight, as shown in fig. 1, are arranged to slide the die-carriers, each of which consists of two blocks *k* and *k'*, (fig. 3,) the former sliding in the straight, and the latter in the dove-tailed portion of the groove.

Each of the die-plates *l* is reversible, and is secured to the block *k'* by a screw, as shown in the drawing, and the block *k'* is secured to and may be adjusted to any position in respect to the block *k* by a screw, *m*, (fig. 3.) A pin, *n*, forming a part of but situated eccentrically with each of the short spindles *f*, enters a slot formed in

each of the blocks *k*, so that as the spindles are turned, as above described, the blocks and their die-plates will be moved from or towards the centre of the spindle B.

Two dies *y*, the inner edges of which are notched, as shown in fig. 2, slide in grooves at right angles to the die-plates *l*, and may be moved to and fro in the said groove by operating their feed-screws *y'*.

A plate, F, is arranged to slide on guides *p*, formed on the upper portion of the frame of the machine, and is confined thereto vertically by projections or lips underlapping the said guides, as seen in fig. 5, and at the rear of this sliding plate is hung a hand-lever, *q*, to the short arm of which is hinged a spring-pawl, q^1, the point of the latter being adapted to the teeth of a rack, q^2, so that when its lever is vibrated, the sliding plate is caused to move upon the guides *p* towards the head E of the spindle B.

When the operating-handle is released, it will fall to such a point that the pawl is free from contact with the rack, which does not prevent the sliding plate F from being moved back on its guides by hand.

Two blocks, *r* and *r'*, slide in dove-tailed guides formed on the plate F, and may be moved simultaneously from or towards each other by turning a rod, *s*, which passes through the said blocks, and has cut upon it right and left-handed screw-threads, as shown in fig. 5. Each of these blocks *r* and *r'* is provided with a notched die, *t*, (fig. 5,) the two dies together being arranged for griping the head of a bolt, which when thus held is in line with the centre of the spindle B.

At each end of the sliding plate F is formed a cavity, t^1, so arranged as to receive the droppings of oil from the plate, and direct them on to the inclined surface *u* of the frame of the machine, from which the oil or other lubricant flows through the straining-sieve *u* into the reservoir *a*.

A pump-barrel, G, is bolted or otherwise secured to the bottom of the reservoir *a*, and its hollow plunger *v*, contains a spiral spring, *v'*, which, bearing on the bottom of the barrel, has a constant tendency to elevate the plunger, the latter carrying on its top a roller, 2, which is acted upon by an eccentric or cam, *w*, on the spindle B, so that by the combined action of this eccentric or cam, and the spring within the plunger, the desired reciprocating motion is imparted to the latter.

When the plunger rises, the oil or other lubricant passes from the reservoir *a* into the barrel of the pump through a number of small apertures, *x*, (fig. 1,) and by the return motion of the plunger is forced thence through the valve-chest, shown in fig. 2, and through a small tube, *x'*, which is so bent as to direct the oil to the point where the die-plates *l l* are acting on the stem of the bolt.

The spindle B, with its screw-cutting dies *l l*, is rotated in the direction of the arrow, fig. 4, and the bolt Z, on which the thread has to be cut, is held between the dies *t t* of the sliding plate F, as shown in red lines fig. 1. The plate, with its bolt, is moved forward towards the screw-cutting dies *l l*, by operating the lever *q*, until the cutting of the screw is commenced, when the handle is released, and the sliding plate is free to be moved forward by the action of the cutting-dies on the bolt.

When the operation has been completed, the handle f^3 is operated by the attendant, and the dies *l* drawn apart in the manner before described, through the medium of the loose disk D, segments *f*, spindles f^1, and their eccentric-ends *n*. The plate F is now moved back by hand, and the bolt thereby withdrawn from between the opened dies, after which the handle is restored to its upright position, and the dies thus closed by the recoil of the spring *d*, as described above, without any change of the revolving spindle.

This machine may also be used for threading nuts, which are held between the notched plates *y*, and threadrd by a tap secured to the cross-head F.

The saturated particles of metal cut from the bolts, and the drippings of oil from various parts of the machine, fall upon the inclined surface *u* and sieve *u'*, the pure oil passing through the latter, and dropping into the reservoir *a*, from which it is again dumped up to lubricate the bolts as they are cut.

The above arrangement is an effective automatic oiling-device, and is economical in its operation, as very little if any of the oil is wasted.

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

1. For opening and closing the dies while the machine is in motion, two or more cranked or eccentric-spindles *f*, each carrying a toothed segment or pinion, adapted to internal teeth in a loose disk, which is controlled partly by a spring, *d*, and partly by the friction-clamp herein described, or any equivalent to the same, the whole being combined with the spindle of a screwing-machine, substantially as specified.

2. The cutting-dies *l l*, secured to the blocks *n n*, but admitting of an adjustment independently of the latter, substantially as specified.

3. The pump, with its piston and spring, in combination with the spindle B, and its eccentric or cam, substantially as and for the purpose herein set forth.

4. The within-described lever, spring-pawl, and rack, arranged for operating the sliding head or plate, substantially as set forth.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

WM. B. BEMENT.

Witnesses:

WILLIAM H. CROMWELL,

JOHN M. SHRIGLEY.