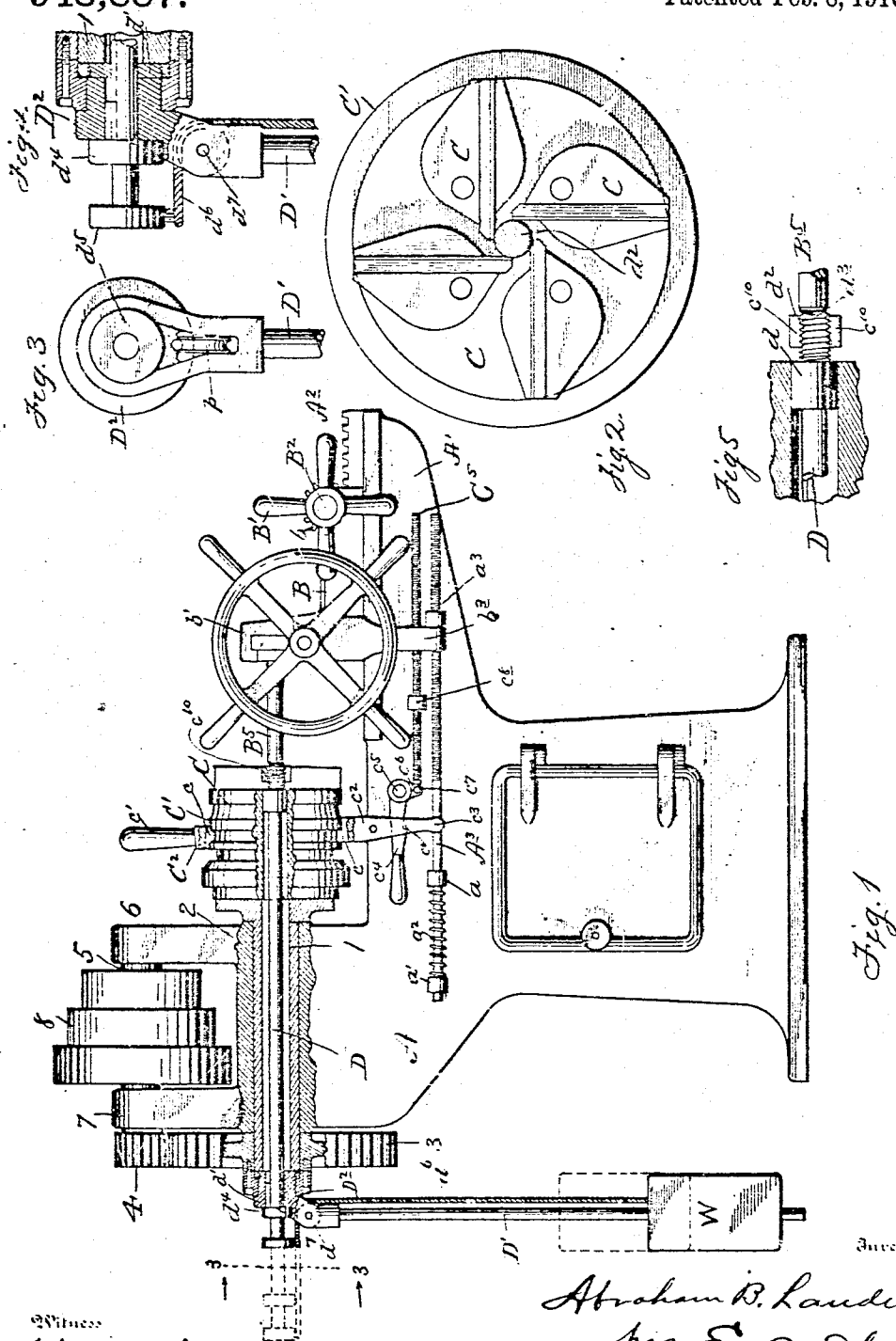


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BOLT CUTTING MACHINE.
APPLICATION FILED OCT. 7, 1905.

948,887.

Patented Feb. 8, 1910.



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ABRAHAM B. LANDIS, OF WAYNESBORO, PENNSYLVANIA.

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948,887.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ABRAHAM B. LANDIS, a citizen of the United States, residing at Waynesboro, in the county of Franklin and State of Pennsylvania, have invented certain new and useful Improvements in Bolt-Cutting Machines, of which the following is a specification.

In cutting threads on bolts, screws, etc., some difficulty is ordinarily experienced in securing a smooth and true thread at the point of the bolt because of the irregularity or variation in the force with which the blank is fed to the die at the beginning of the cutting operation.

The object of my said invention is to provide an attachment for use in bolt cutting machines which will insure the end of the bolt being cut with a regular and true thread, regardless of the manner or force with which the blank is fed to the die, all as will be hereinafter more fully described and claimed.

Referring to the accompanying drawings which are made a part hereof and on which similar reference characters indicate similar parts, Figure 1 is a side elevation of a bolt cutting machine showing one side of the central bearings and cutter-head broken away in order to illustrate the improved mechanism more clearly, Fig. 2 is a front elevation of the cutter-head with the die closed in the position it occupies when in operation, Fig. 3 a detail end elevation as seen when looking in the direction indicated by the arrows from the dotted line 3-3 in Fig. 1, Fig. 4 a detail sectional view similar to a portion of Fig. 1 but on an enlarged scale, and Fig. 5 a similar view showing the end of the follower.

In said drawings the portions marked A represent the main frame or body of the machine, B the bolt carrying and feeding carriage, C the cutter-head and D the follower forming the principal subject matter of my present invention. The body or frame A is or may be of any suitable or approved construction containing the ways for the moving parts and bearings for the shafts and other operating mechanism. The bolt carrying carriage B is also of a usual or any approved construction, mounted upon suitable ways on an extended table A' of the frame A and adapted to be operated by means of a hand wheel B' mounted on the shaft B², which shaft is provided with a

suitable pinion b engaging with a rack-bar A² suitably mounted on the table A'. It is provided with sliding jaws b' adapted to receive and hold the bolt blank B² as shown and described in my application No. 281,812 pending herewith. The cutter-head C is also of any approved construction and arrangement, but preferably like that shown in my application No. 281,813 pending herewith. It is provided with a cam-ring C' for operating the cutter-die having a shifting fork C² with inwardly projecting tongues c engaging with a circumferential groove in said cam-ring. Said shifting fork C² is provided with handles or arms c' and c'' by which it may be operated. The lower arm c'' is connected at its lower end by a pivot c² with a rod A³ mounted to slide at one end in a lug a on the side of the frame A and at the other end in a perforation in the lower end of an arm b³ which depends from the side of the bolt carriage B. The end of said rod A³ which extends beyond the lug a is provided with a collar a' and a coiled-spring a² is interposed between said collar a' and the lug a. The other end of said rod A³ is screw-threaded and a nut a'' is mounted thereon on the end projecting outside of the arm b³. A short distance above the lower end of said arm c'' it is provided with a horizontally extending latch-pin c⁴ with which a latch C⁴ is adapted to engage. Said latch C⁴ is mounted on a pivot c⁵ on the side of frame A and has a downwardly projecting arm c⁶ which is connected by a pivot c⁷ with the end of a rod C⁵. The other end of rod C⁵ is mounted and adapted to slide through a perforation formed in the arm b³ at a point just above the perforation through which the rod A³ slides. Said rod C⁵ is screw-threaded and a nut c⁸ is mounted thereon in front of the arm b³. The cutter-die composed of the cutter-bars c'' is mounted or arranged on the cutter-head in any usual or appropriate manner.

When the parts are in the position shown in Fig. 1 the cutter-die is closed and in position to cut the threads upon the bolt blank B², being held and locked in this position by means of a latch C⁴. The bolt carriage is then moved forward to a point where the arm b³ will strike the nut c⁸, which nut is positioned on the rod C⁵ at the point where the length of thread desired will have been cut. When said arm b³ strikes said nut c⁸ it operates to tilt the latch C⁴ and release its

engagement with the arm c^2 , when the spring a^2 will expand and pull the lower end of said arm c^2 back, sliding the cam ring C' so as to permit the cutter die to open. The carriage B is then run back and the bolt blank removed and another put in its place and the operation repeated. As the carriage B is run back to the point where the finished bolt is to be removed and a new bolt blank is to be introduced, the arm b^3 by reason of its contact with the nut a^3 will draw the rod A^3 and, through its connection with the arm c^2 , the cam-ring C' into position to close the cutter-die, when the latch C^1 will automatically engage over the latch-pin c^4 and lock said cutter-die in position.

The cutter-die C is mounted on a hollow spindle 1, journaled in suitable bearings 2 on the frame A and is provided with a gear wheel 3, engaging with a pinion 4 on a driving shaft 5, which is journaled in suitable bearings in uprights 6 and 7 on the end of said frame. Said shaft 5 is provided with a cone-pulley 8 by which it may be connected with any convenient driving power.

The follower D consists of a rod mounted to extend through the hollow spindle 1, being formed on its inner end with an enlarged portion d^1 which is adapted to fit to slide within the central perforation in the cutter-head. Its outer end is supported in a ring d' secured at the end of said hollow spindle. Its forward end beyond the enlarged portion d^1 is screw-threaded and hardened and has a slightly hollow or conical depression in its end d^3 . The thread on the part d^2 is of a pitch to correspond with the cutters of the cutter-die and being hardened will not be further cut by said cutter-die. Its rear end is provided with a stop collar d^4 and with another collar d^5 connected by means of a cord d^6 passing over a pulley p , which is mounted on a pintle d^7 , with a weight W. Said weight W is mounted to slide on a rod D' , which rod is connected with the bracket D^2 , which is secured to the outer end of spindle 1 so that said spindle will rotate freely therein, as most clearly shown in Fig. 4.

By this arrangement the weight W will always keep the follower D in the position shown in Fig. 1 with the stop collar d^4 against the end of the bracket D^2 and its forward end d^2 in the cutter-die, unless it is forced back. The parts being in the position, as shown in Figs. 1 and 5, when the bolt blank B^1 is fed forward by the carriage B, its end, which is usually rounded or somewhat tapered, will center in the depression d^3 in the point of the part d^2 of the follower. The cutter-die being in rotation the operation will be to force said follower back and gradually take in the end of the bolt blank B^1 . As said follower cannot move back any faster than the turning of the cutter-die will permit, the engagement of the

cutter-die upon the end of the bolt blank will be even and true under any condition, regardless of the force or speed with which the carriage B is forced up to the die, the result being a true and even thread at the point as well as upon the other threaded portion of said bolt. When the cutting operation upon the bolt is complete, the die opened and the carriage moved back, as before described, the weight W will operate to automatically move the follower forward in contact with the end bolt until the stop collar d^4 shall strike the outer face of the bracket D^2 , when the parts will be in the same position as shown in Fig. 1. The cutter-die is closed, as before described, upon the hardened portion d^2 of said follower, and the parts will be in position for another operation, as will be readily understood. As will be readily understood, the weight W can be made sufficiently heavy to force the bolt and carriage back, (when the die is opened) ready to receive a new blank avoiding the necessity of doing this by hand.

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

1. In a bolt cutting machine, the combination of the cutter-head formed with a central perforation and mounted upon a hollow spindle, the carriage for feeding the bolt to the cutter-die, and a follower with a screw-threaded forward end mounted in said cutter-head with its screw-threaded end within said die and forming a rest for the end of the bolt while being operated upon, substantially as set forth.

2. In a bolt cutting machine, the combination of the cutter-head mounted upon a hollow spindle and carrying the cutter-die, the carriage for feeding the work to the die, and a reciprocating follower mounted within said cutter-head and connected with a weight, whereby it is held into close contact with the end of the work being fed to the machine the forward end of said follower being screw-threaded and mounted within the cutting die, substantially as set forth.

3. In a bolt cutting machine, the combination of the cutter-head mounted upon a hollow spindle and formed with a central perforation, a follower mounted to reciprocate in said central perforation and connected with means for normally holding it forward, its extreme forward end being screw-threaded and mounted within the cutter-die to support and guide the work, and the work holding and feeding mechanism, substantially as set forth.

4. In a bolt cutting machine, the combination of the cutter-head formed with a central perforation and mounted upon a hollow spindle, a follower mounted to reciprocate within said central perforation and formed with a stem extending through said hollow

spindle, a stop for limiting the forward motion of said follower and a connection with a weight for holding said follower forward, the extreme outer end of said follower being screw-threaded and mounted within the cutter-die to bear against the work as it is fed to said die, the cutter-die, and means for holding and feeding said work, substantially as set forth.

5. In a bolt cutting machine, the combination of the cutter-head formed with a central perforation and mounted upon a hollow spindle, a reciprocating follower mounted therein, means for holding said follower forward, the extreme forward end of said follower being formed screw-threaded and of hardened material to fit and operate within the die, means for holding and feeding the work to said die, the point of said follower being formed with an axial tapered hollow to receive and center the point of said work, substantially as set forth.

6. In a bolt cutting machine, the combination of the cutter-head formed with a central perforation and mounted upon a hollow spindle, means for opening and closing the dies of said cutter-head operated through a shifting lever or ring C², said shifting lever having an arm c² provided with a latch-pin, a latch pivoted upon the frame of the machine adapted to engage said latch-pin and lock said parts in position to hold the cutter-die closed, the carriage for holding and feeding the work to said cutter-die having an arm adapted to contact with a part connected with said latch and release it at the point where the work is finished, and another connection between said carriage and said lever connected with a spring which will operate to draw said lever back and permit the die to open, substantially as set forth.

7. In a bolt cutting machine, the combination with the cutter-head and cutter-die thereon, of a reciprocating follower mounted in a central perforation in said head and connected with means to normally hold it forward with its extreme end within the cutter-die, means for opening and closing said cutter-die, the work holding and feeding carriage, and a connection between said work holding and feeding carriage and the mechanism

for opening and closing said cutter-die whereby when the work has been finished said die opening mechanism will be automatically operated and the follower permitted to return to its position within said die, substantially as set forth.

8. In a bolt cutting machine, the combination of the cutter-head, the reciprocating follower mounted therein and connected with means for normally holding it forward with its extreme forward end within the cutter-die, said cutter-die, the work holding and feeding carriage adapted to feed the work against said follower and force it within the die, and a connection between the die opening and closing mechanism and said carriage whereby said die is automatically opened at the finish of the work, the follower returned to its position therein, and the die automatically closed thereon ready for the beginning of the next operation, substantially as set forth.

9. In a bolt cutting machine, the combination of the cutter-head, means for opening and closing the cutter-die, the work holding and feeding carriage, the operating lever for closing said cutter-die, a latch pivoted on the frame of the machine for engaging with said lever and locking it in position to hold said die closed, a trip-rod connected with said latch and provided with an adjustable nut adapted to contact with an arm of said carriage to release said latch at the point where the work is finished, another rod also connected with said lever and with a spring adapted to draw said rod and lever back when said latch is released, to permit the die to open, and an adjustable nut on the opposite end of said rod with which said arm of said carriage will contact when it is drawn back to again close said die and permit the latch to automatically engage with said lever to lock it in closed position, substantially as set forth.

In witness whereof, I have hereunto set my hand and seal at Waynesboro, Pa., this 8th day of September, A. D. 1905.

ABRAHAM B. LANDIS. [L.S.]

Witnesses:

BEN F. LANDIS,
H. P. GARNER.