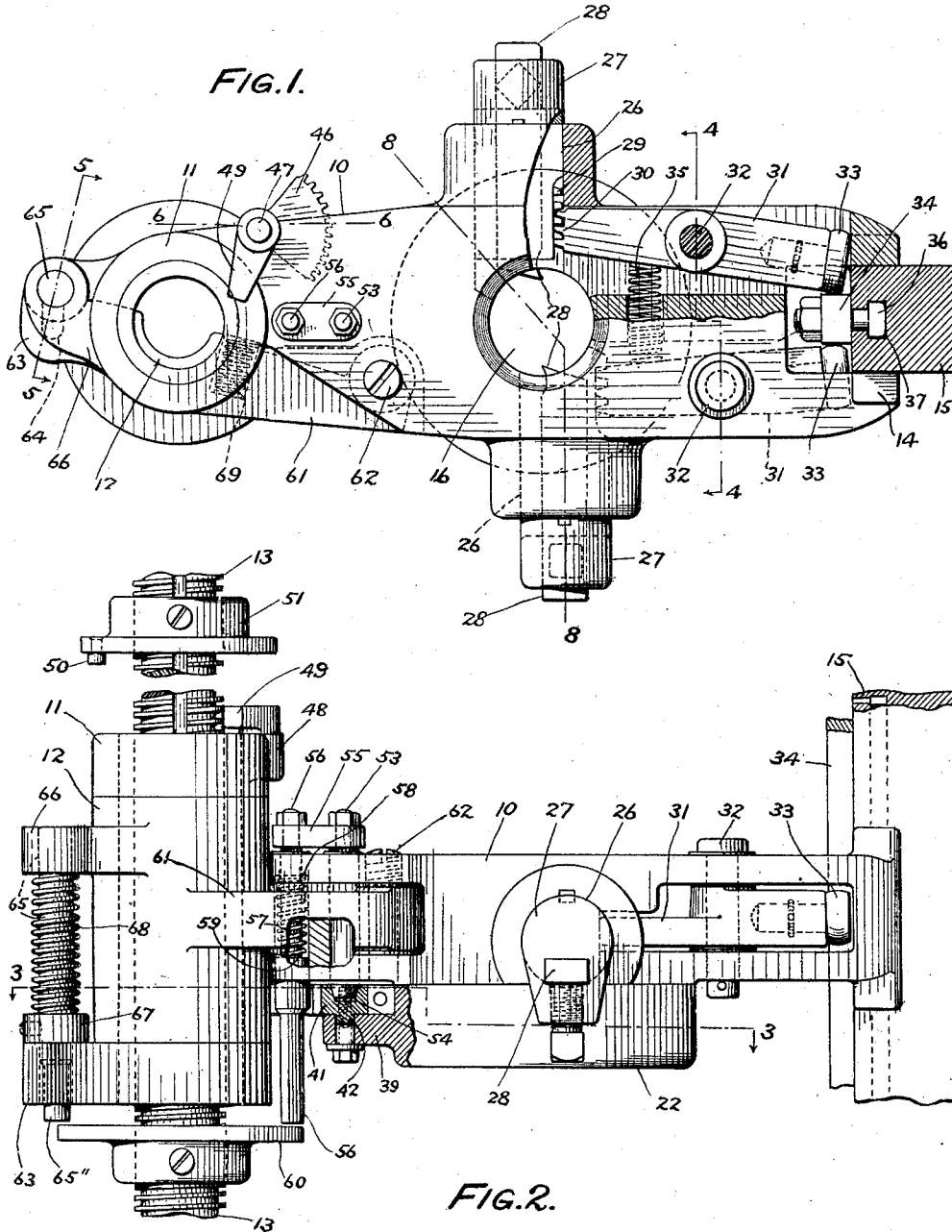


Z. B. COES, R. F. SCOTT & C. H. THUMLERT.
MECHANISM FOR CUTTING BOLTS.
APPLICATION FILED JAN. 16, 1907.

965,156.

Patented July 26, 1910.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

FIG. 3.

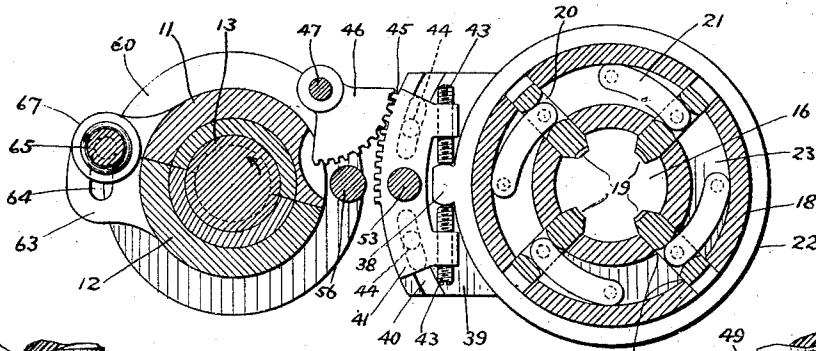


FIG. 4.

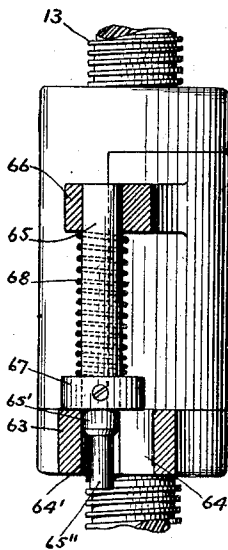
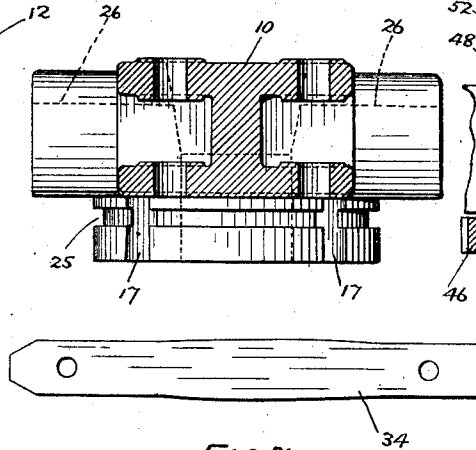


FIG. 5.

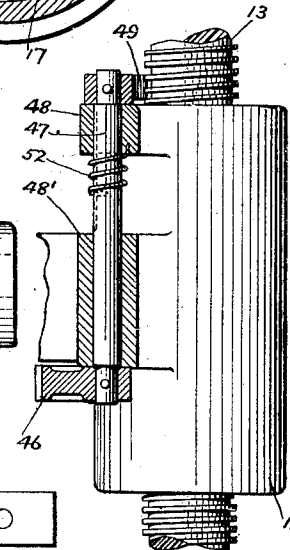


FIG. 6.

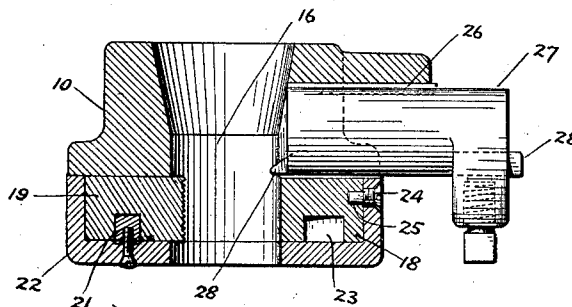


FIG. 8.

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ZORESTER B. COES, ROBERT F. SCOTT, AND CHARLES H. THUMLERT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO EDWIN HARRINGTON, SON & COMPANY, INCORPORATED, OF PHILADELPHIA, PENNSYLVANIA.

MECHANISM FOR CUTTING BOLTS.

965,156.

Specification of Letters Patent.

Patented July 26, 1910.

Application filed January 16, 1907. Serial No. 352,499.

To all whom it may concern:

Be it known that we, ZORESTER B. COES, ROBERT F. SCOTT, and CHARLES H. THUMLERT, residents of the city of Philadelphia, county of Philadelphia, and State of Pennsylvania, have jointly invented Improved Mechanism for Cutting Bolts, of which the following is a specification.

This invention is more particularly an improved head for stay bolt cutting machines and its leading object is to provide improved mechanism for more accurately cutting threads on the ends of locomotive stay bolts and reducing the intermediate portions to the shape desired for flexible bolts. It will be understood, however, that the mechanism is capable of use for threading and forming other products.

In the drawings, Figure 1 is a sectional plan view of mechanism embodying the invention; Fig. 2 is a sectional side elevation thereof; Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2; Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1; Fig. 5 is a sectional view taken on the line 5—5 of Fig. 1; Fig. 6 is a sectional view taken on the line 6—6 of Fig. 1; Fig. 7 is a plan view of a former, and Fig. 8 is a sectional view taken on the line 8—8 of Fig. 1.

As shown in the drawings, the head 10 has at an end thereof the hub 11 with the half nut 12 for engaging the lead screw 13 and at the other end the jaws 14 for engaging the guide post 15, the head being fed by the screw along its length and along the post, which prevents rotary motion. A circular hole 16 extends through the middle of the head in the direction of its movement for the reception of the bolt blank. Guide ways 17 are formed in the cylindrical projection 18 of the head, radially to the hole 16, for the reception of the thread cutters 19. In the cutters are formed the ways 20 which receive the eccentric cams 21 secured within a cap 22 which is revoluble on the projection, the cap moving the cams in the circular groove 23 of the projection to move the cutters into and out of engaging position with relation to the work. To engage the cap on the seat, a screw 24 is set in its periphery and projects into the peripheral groove 25 of the projection. Guide ways 26 extend trans-

versely to the hole 16 and contain the holders 27 for the tools 28 for reducing the middle portion of the bolt. These holders have thereon the teeth 29 which are engaged by teeth 30 on the inner ends of the levers 31. The levers are fulcrumed on the pins 32 of the head and move the holders in and out by the action, through the rollers 33 on the levers, of the former 34 and the spring 35, the latter being disposed between the levers to hold the rollers in contact with the former. The former is held by T-bolts 36 passing therethrough and engaging the T-slot 37 in the guide post 15.

The cap 22 is provided with the boss 38 and with the bracket 39 having the circular way 40 concentric with the cap. This bracket carries a slide 41 having thereon guides 42 which move in the way 40 and screws 43 which impinge on the boss 38 to adjust the relation of the cap and slide, the slide being fixed when adjusted by the set screws 44. A circular rack 45 on the bracket slide is engaged by a sectoral rack 46 fixed to the shaft 47 which is journaled in the bearings 48 and 48'. The shaft has fixed thereto a finger 49 which lies in the path of the boss 50 on a collar 51 fixed adjustably on the lead screw 13. When the rotation of the screw in the direction of the arrow thereon causes the boss to strike the finger, the shaft will act to rock the sectoral rack, turn the cap and move the cutters inwardly. A coiled spring 52, having one end fixed to the bearing 48 and the other end fixed to the shaft 47, acts to rock the racks in the opposite direction to withdraw the cutters.

A bolt 53 is adapted to reciprocate in the head and engage a socket 54 in the slide. This bolt is connected by a yoke 55 with a bolt 56, which reciprocates in the head. The bolt 56 is pressed down by a spring 57, one end of which engages the bearing 58 on the head and the other end the shoulder 59 of the bolt. When the cutters are closed, the spring 57 depresses the bolts 56 and 54, the latter engaging the slide to lock the cutters in their inner or working position. These bolts are elevated to release the cutters by a collar 60, fixed adjustably to the lead screw, in the path of the bolt 56 as it is

carried along by the action of the screw on the head.

The half nut 12 has an arm 61, pivoted by a pin 62 to the head. The hub 11 has the lug 63 containing the slot 64 terminating in the enlarged hole 64' for engaging a bolt 65. This bolt is adapted to reciprocate in the bearing 66 of the half nut and has a collar 67 fixed thereon which limits its downward movement by striking the lug 63, a spring 68 being disposed between the bearing 66 and the collar 67 to press the bolt down. When the nut is closed to engage the screw, it is locked by the engagement of the body 65' of the bolt with the hole 64', but when the head has been carried along the screw until the collar 60 strikes the point 65'' of the bolt, the body 65' is moved out of the hole and the half nut is opened to disengage the screw by a spring 69 which is disposed between the head and the arm.

In operation, the cap is set by means of the slide and its connections so that the cutters 21 will occupy the position desired for cutting the thread when thrown in and the tool 28 is adjusted for cutting the body of the bolt, the blank for which is held and revolved in the hole 16 by well known mechanism. The cutters being properly adjusted and the half nut 12 disengaged from the lead screw 13, the head is lifted to the upper or initial position and the half nut is closed by hand and locked by the bolt 65 on the screw. The boss 50 on the revolving screw now strikes the finger 40 which acts through the intermediate parts to close the cutters, where they are locked by the bolt 54. The lead screw now translates the head to form and thread the revolving bolt.

When the bolt has been given its thread and form, the translation of the head carries the bolts 56 and 65 against the collar 60, upon which the cutters and half nut are disengaged, and the head is again elevated for a second operation, the concaving tool following the former in the retractile movement.

Having described our invention, we claim:—

1. In a bolt cutting mechanism, a head having an opening therein, one or more cutters adapted to move in said head into and out of position for engaging a bolt disposed in said hole, a device revolvably connected to said head, mechanism connecting said device with said cutters whereby said cutters are moved upon revolving said device, a rack connected to said device, a rack mounted to rock with relation to said head and engaging said first rack, and mechanism for automatically operating said second rack in a predetermined manner.

2. In a bolt cutting machine, a head having a cylindrical bearing thereon and a hole therein, one or more cutters adapted to re-

ciprocate in said head radially disposed to said hole, a cap revolvable on said bearing and having a hole therein registering with the hole in said head, cam mechanism whereby the revolution of said cap moves said cutter or cutters, a rack adjustably connected to said cap, a journaled shaft, a rack on said shaft, said second rack engaging said first rack to rotate said cap, means for translating said head, and means for rocking said shaft at predetermined points in the movement of said head.

3. In a bolt cutting machine, a head, a cutter connected in movable relation to said head, means for translating said head, means for automatically throwing said cutter to operative and inoperative position at predetermined points in the travel of said head, and mechanism for automatically locking and unlocking said cutter at predetermined points in the movement of said head, said mechanism comprising a bolt, a second bolt connected therewith, a spring for moving said bolts into locking engagement, and a striking device for moving said bolts to the unlocking position.

4. In a bolt cutting machine, a head, a cutter connected in movable relation to said head, a cap revolvably connected to said head, a cam connected to said head and engaging said cutter, an automatically operated bolt for locking said cap, a second bolt connected to said first bolt, and a device for striking said second bolt for operating said first bolt to unlock said cap.

5. In a bolt cutting machine, a guide post, a revolvable screw, a head engaging said post and a hub engaging said screw, a threaded device movably connected to said head and adapted for engaging said screw, a bolt for locking said device in engagement with said screw, and means for automatically disengaging said bolt.

6. In a bolt cutting machine, a revolving screw having a collar thereon, a head, a sectional nut pivoted to said head and adapted for engaging said screw, and a spring-pressed bolt connected with said head and adapted for engaging said nut to lock it in engagement with said screw, said collar disengaging said bolt and unlocking said nut.

7. In a bolt cutting machine, a revolvable screw, a head having means whereby it is engaged and disengaged with relation to said screw, a cutter movable in said head, means comprising a rock shaft and a finger thereon for moving said cutter, and a device on said screw for operating said finger to move said cutter.

8. In a bolt cutting machine, a rod, a revolvable screw parallel to said rod, a movable cutting head having means for engaging said rod and also means for engaging said screw, said means comprising a hinged

member carried by said head, means for
locking said member in engagement with
said screw, and means for automatically un-
locking and disengaging said member at a
5 predetermined point in the movement of
said head.

In testimony whereof we have hereunto
set our names this 12th day of January,

1907, in the presence of the subscribing wit-
nesses.

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ROBT. F. SCOTT.
CHAS. H. THUMLERT.

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