

E. W. DUSTON.
EJECTING MECHANISM FOR HEADING MACHINES.
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Fig. 1

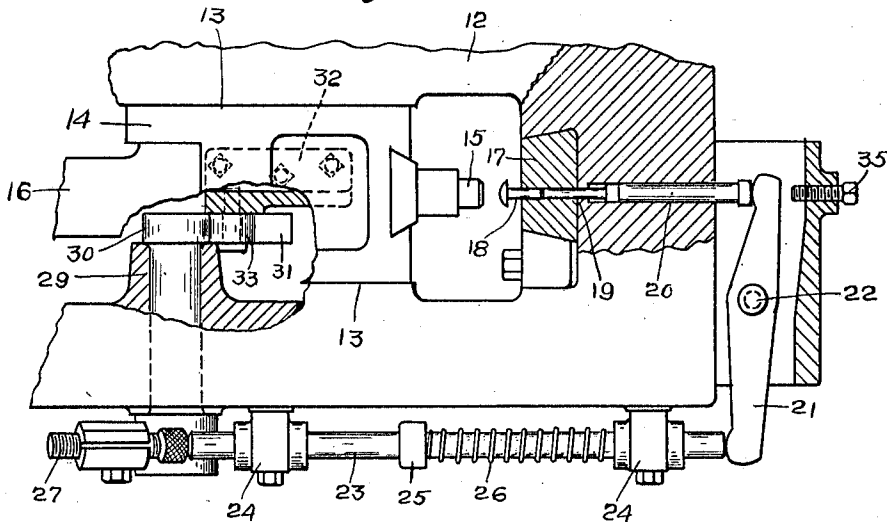
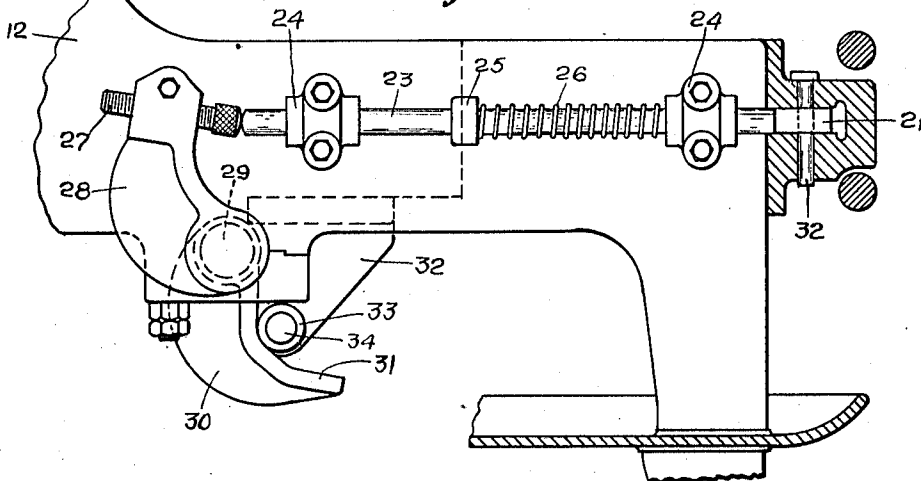


Fig. 2



WITNESSES

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EJECTING MECHANISM FOR HEADING-MACHINES.

1,004,247.

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To all whom it may concern:

Be it known that I, ERNEST W. DUSTON, a citizen of the United States, residing at Waterbury, county of New Haven, State of Connecticut, have invented an Improvement in Ejecting Mechanism for Heading-Machines, of which the following is a specification.

This invention relates to machines for forming heads on bolts, screws, and the like, and more particularly to the mechanism for ejecting the blanks from the machine after the heads have been formed thereon.

Bolt heading machines as usually constructed comprise a die for holding a blank from which a bolt is to be made and a heading punch arranged to strike the blank held by the die and upset a portion thereof left projecting from the die to form a head. Such machines are usually provided with mechanism for ejecting the headed blanks from the die, said ejecting mechanism having a portion which is engaged by suitable means on the head which carries the punch when said head is retracted and by which said ejecting mechanism is operated.

By reason of the fact that the blank, during the heading process, is more or less upset in the die, so that considerable force is required to eject the same, and for the further reason that the force of the punch head is exerted quite suddenly upon the ejecting mechanism when brought into engagement therewith, breakage sometimes occurs which may result in injury to the operator or in damage to property caused by flying parts of the broken ejecting mechanism.

It is one of the objects of the present invention to overcome the difficulties above referred to, and this, in the mechanism hereinafter described, has been accomplished by providing a construction of parts whereby the actuating means carried by the punch head is in continuous engagement with the cooperating portion of the ejecting mechanism.

This and other objects of the invention will best be understood from the following description of one form or embodiment thereof illustrated in the accompanying drawing, forming a part of this specification, and in which:

Figure 1 is a plan view, partly broken away, of a bolt heading machine having my improved ejecting mechanism applied there-

to; and Fig. 2 is a side elevation, partly broken away, of the parts shown in Fig. 1.

12 denotes the machine frame having guides 13 for the punch head 14 carrying the heading punch 15, said punch head being reciprocated in said guides by any suitable means, such as a pitman or toggle link 16.

17 denotes the die adapted to receive a blank 18 and hold the same in position for engagement by the heading punch 15 when the punch head 14 is reciprocated.

19 denotes an ejecting pin or member operated by a plunger 20, which may be separate from said pin or formed integral therewith as preferred.

21 denotes a lever pivoted at 22 to the machine frame or to a bracket secured thereto. The lever 21 engages at one end the plunger 20 and at the other end is engaged by a rod 23 guided for longitudinal movement in brackets 24 on the machine frame. The rod 23 is provided with a collar 25 between which and one of the brackets 24 is interposed a spring 26, tending normally to force said rod 23 toward the left as shown in the drawing. The left end of the rod 23 is engaged by an adjusting screw 27 carried by an arm 28 on a rock shaft 29, said rock shaft having a second arm 30 formed with a cam surface 31. The screw 27 provides means whereby the operative connections between the arm 28 and the ejecting member may be adjusted.

32 denotes a bracket bolted to the punch head 14 and depending therefrom, said bracket being provided with a stud 34 preferably provided with a cam roller 33 cooperating with the cam surface 31 on the arm 30.

35 denotes a stop screw for the lever 21.

The operation of the above described mechanism is as follows. The rock shaft 29 with its arms 28 and 30 constitutes in effect a lever having one of its arms engaged by the spring pressed rod 23 and held thereby with its other arm 30 in engagement with the cam roller 33. The form of the cam surface 31 is such that the cam roller 33 remains in engagement therewith when the punch head 14 is at the extreme limit of its movement toward the right as shown in the drawing, or throughout the travel of said punch head. The form of the cam surface 31 is such that during the first part of the travel of the punch head toward the left

after the heading operation the roller 33 moves idly over this surface without turning the arm 30, but as this travel proceeds said arm 30 begins to turn with a gradually increasing velocity relative to the velocity of travel of the punch head until the parts arrive at the position shown in Fig. 2, when the full movement of the punch head is imparted to the ejecting mechanism. Operation of the rock shaft 29 of course causes a corresponding operation of the rod 23 and actuation of the ejecting pin 19 to eject the headed blank, this ejecting movement of the pin 19 commencing gradually during the latter part of the travel of the punch head away from the die.

Having thus described my invention I claim:

1. The combination with heading mechanism including a reciprocating punch head, of ejecting mechanism, and means carried by said punch head for actuating said ejecting mechanism during a portion only of the travel of said punch head in one direction, said means being in continuous engagement with a portion of said ejecting mechanism.

2. The combination with heading mechanism including a reciprocatory punch head, of ejecting mechanism, and means carried by said punch head and in continuous engagement with a portion of said ejecting mechanism for actuating said ejecting mechanism with a gradually increasing velocity relative to the velocity of travel of said punch head.

3. The combination with heading mechanism including a reciprocatory punch head, of ejecting mechanism, and means carried by said punch head for actuating said ejecting mechanism with a gradually increasing velocity relative to the velocity of travel of said punch head, said means being in continuous engagement with a portion of said ejecting mechanism but operative to actuate said ejecting mechanism during a portion only of the travel of said punch head in one direction.

4. The combination with heading mechanism including a reciprocatory punch head, of ejecting mechanism including a part having a cam surface, and a roller carried by said punch head and in continuous engagement with said cam surface throughout the travel of said punch head for actuating said ejecting mechanism.

5. The combination with heading mechanism including a reciprocatory punch head provided with a projecting bracket, of ejecting mechanism and a roller carried by said bracket and in continuous engagement with a portion of said ejecting mechanism throughout the travel of said punch head for actuating said ejecting mechanism.

6. The combination with heading mechanism including a reciprocatory punch head,

of ejecting mechanism including a lever, and means carried by said punch head for actuating said lever during a portion only of the travel of said punch head in one direction, said means being in continuous engagement with said lever.

7. The combination with heading mechanism, including a reciprocatory punch head, of ejecting mechanism including a lever, and means carried by said punch head and in continuous engagement with said lever for actuating said lever with a gradually increasing velocity relative to the velocity of travel of said punch head.

8. The combination with a heading mechanism including a reciprocatory punch head, of ejecting mechanism including a lever having a cam surface, and means carried by said punch head and in continuous engagement with said cam surface for operating said ejecting mechanism.

9. The combination with heading mechanism including a reciprocatory punch head, of ejecting mechanism including a lever having a cam surface, and a cam roller carried by said punch head and in continuous engagement with said cam surface throughout the travel of said punch head for actuating said ejecting mechanism.

10. The combination with ejecting mechanism comprising an ejecting pin, a rod operatively connected with said pin, a rock shaft, an arm on said rock shaft, an adjusting screw operatively engaging said arm and rod, and a second arm on said rock shaft, of heading mechanism provided with means in continuous engagement with said last named arm for actuating said ejecting mechanism.

11. The combination with heading mechanism including a reciprocatory punch head provided with a roller, of ejecting mechanism comprising an ejecting member, a rod operatively connected with said ejecting member, and a lever having an arm operatively engaging said rod and a second arm arranged for engagement by said roller.

12. The combination with heading mechanism including a reciprocatory punch head provided with a roller, of ejecting mechanism comprising an ejecting member, a rod operatively connected with said ejecting member, and a lever having an arm operatively engaging said rod and a second arm in continuous engagement with said roller.

13. The combination with heading mechanism including a reciprocatory punch head provided with a roller, of ejecting mechanism comprising an ejecting member, a rod operatively connected with said ejecting member, guides in which said rod is longitudinally movable, a collar on said rod, a spring on said rod between said collar and one of said guides, and a lever having an arm operatively engaging said rod and a

second arm arranged for engagement by said roller.

14. The combination with heading mechanism including a reciprocatory punch head provided with a roller, of ejecting mechanism comprising an ejecting member, a rod operatively connected with said ejecting member, guides in which said rod is longitudinally movable, a collar on said rod, a spring on said rod between said collar and one of said guides, and a lever having an arm operatively engaging said rod and a second arm having a cam surface held by said spring in continuous engagement with said roller.

15. The combination with heading mechanism including a reciprocatory punch head provided with a roller, of ejecting mechanism comprising an ejecting member, a rod operatively connected with said member, a

rock shaft, an arm on said rock shaft operatively engaging said rod, and a second arm on said rock shaft arranged for engagement by said roller.

16. The combination with heading mechanism including a reciprocatory punch head provided with a cam roller, of ejecting mechanism comprising an ejecting member, a rod operatively connected with said member, and a lever having an arm operatively engaging said rod and a second arm provided with a cam surface engaged by said cam roller.

In testimony whereof I affix my signature in presence of two witnesses.

ERNEST W. DUSTON.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."