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MAGAZINE AND DELIVERY MECHANISM FOR BAR FEED MACHINES

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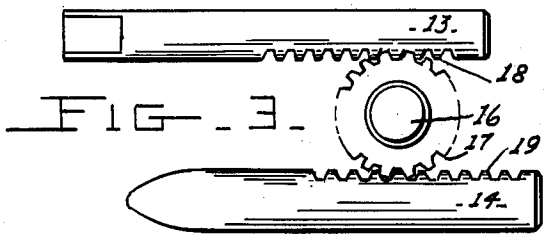


FIG. 3.

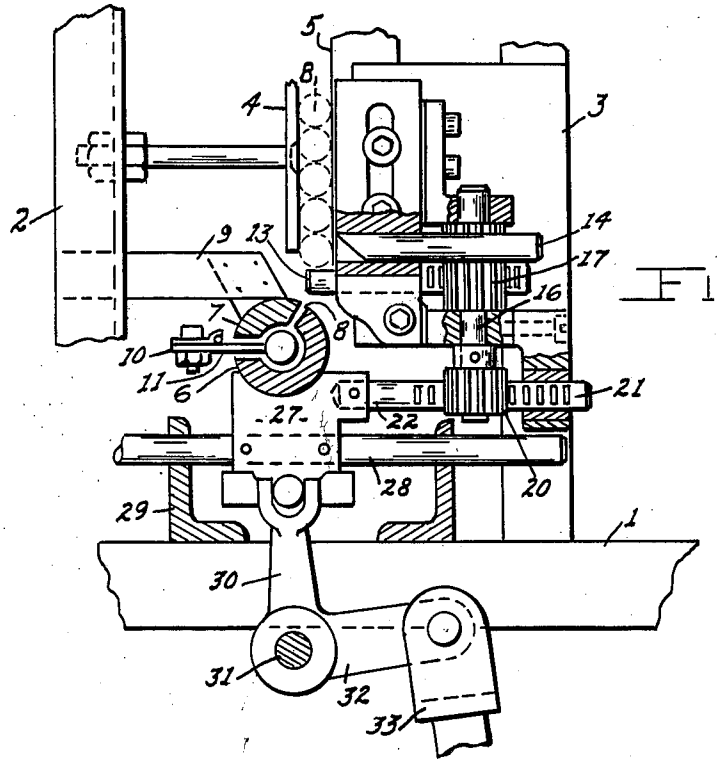


FIG. 1.

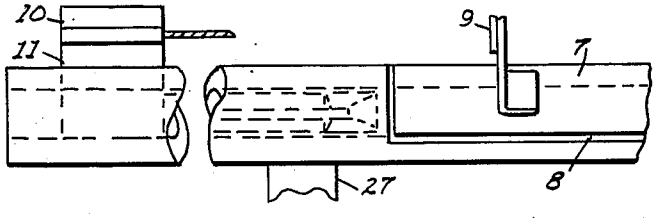


FIG. 2.

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MAGAZINE AND DELIVERY MECHANISM FOR BAR FEED MACHINES

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Original application July 8, 1948, Serial No. 37,646, now Patent No. 2,595,522, dated May 6, 1952. Divided and this application June 5, 1951, Serial No. 230,006

3 Claims. (Cl. 140—126.1)

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This invention has for its object a magazine and feed mechanism for controlling the feeding of stock bars sidewise into the guide, as a tube, of bar feed mechanisms for automatic metal working machines, and particularly has for its object a simple construction hereinafter pointed out for controlling the feeding of the bars from the magazine into the stock bar guide of the bar feed machine.

This application is a division of my copending application Ser. No. 37,646, filed July 8, 1948, and now Patent No. 2,595,522, granted May 6, 1952.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

Figure 1 is a fragmentary transverse sectional view of this magazine and delivery mechanism and the contiguous portion of the bar feed mechanism.

Figure 2 is a fragmentary elevation of a portion of the cradle section of the stock bar guide of the stock bar feed mechanism.

Figure 3 is a fragmentary view illustrating in plan the relative arrangement of the supporting bar and cut-off bar of the escapement mechanism.

The numerals 1, 2 and 3 designate table and upright portions of the frame of the bar feed machine. The magazine for the stock bars B is supported by the frame and arranged in upright position so that the bars feed downwardly sidewise by gravity into the feed tube, or the cradle section thereof. The magazine is formed by opposing plates 4 and 5 forming portions of the frame portions 2, 3.

6 designates the cradle section, and 7 the closure section of the feed tube of the bar feed machine in which a feed plunger works, the cradle section being formed with a lengthwise slot 8 which is normally closed by the closure section 7. One of these sections 6, 7, is shiftable laterally out of alinement with the other section to open and close the slot 8 and when shifted to open the slot 8, the slot is in position to receive the lowermost stock bar B from the magazine.

In the illustrated embodiment of this invention, the cradle section 6 is shifted laterally, or sidewise, to open the slot 8, and also shifted laterally in a return position to close the slot. In this case, the closure 7 is stationary and

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supported by a bracket 9 carried by the portion 2 of the frame. The part designated 10 carries a pusher 11 extending into the cradle section and secured to a push plunger which pushes against the stock bar in feeding the stock bar to the spindle, and tools of an automatic metal working machine. Only the intermediate portion of the cradle section is shiftable laterally, the end portions being stationary, and one end portion performing the function of a breech block to receive the plunger when the plunger is retracted in position to receive a new stock bar from the magazine.

The escapement mechanism comprises two transversely extending bars 13, 14, the bar 13 being an abutment for normally supporting the stock of bars in the magazine, and the bar 14 being a cut-off bar to temporarily support the stack while the lowermost bar is being delivered from the magazine. These bars 13, 14, are arranged at different elevations out of the horizontal, and also are located in different vertical planes, as seen in Figure 3. The cut-off bar 14 is mounted to be adjustable vertically in any suitable manner in order to coact properly with stock bars of batches of different diameters. That is, to conform to the diameter of the stock bars when a new batch of stock bars of different diameter from the previous batch are to be worked.

The escapement mechanism also includes an upright shaft 16 suitably supported by the portion 3 of the frame, and having a pinion 17 meshing on opposite sides of its axis with racks 18 and 19 on the escapement bars 13 and 14 respectively, and also has an additional pinion 20 meshing with a rack 21 on a bar or rod 22 which shifts laterally with the carriage 27 and the shiftable or cradle section 6 of the feed tube. The carriage 27 is mounted on a guide 28 slidable in openings provided in frame members 29 carried by the table portion 1 of the frame.

The carriage is actuated during the operation of the bar feed machine in any suitable manner, as by one or more lever arms 30 mounted on a rock shaft 31, and a lever arm 32 connected to one end of a piston rod 33, the piston of which works in a cylinder, not shown. The control of the actuation of the cylinder forms no part of this invention. Insofar as this invention is concerned, when the piston in the cylinder is actuated in one direction, the carriage 27 is moved to the right to open the slot, and when said piston is actuated in the other direction the carriage 27 is actuated to the left to close the slot.

This magazine and escapement mechanism is

particularly simple and compact and firm to withstand the forces developed in the operation of bar feed machines.

What I claim is:

1. A magazine and delivery mechanism for bar feeds for metal working machines, said mechanism comprising the stock bar guide of a bar feed machine, said guide including a cradle section formed with a lengthwise slot and a closure section for the slot, an upright magazine for the stock bars, the closure section and the cradle section being normally in position to close the slot, one section being mounted to shift sidewise relatively to the other section and to the magazine out of and into position to open and receive a stock bar from the magazine and close the slot, and escapement mechanism to deliver the stock bars one by one from the magazine to the open slot during the shifting of the shiftable section in one direction and to close the slot during return shifting of the shiftable section in the opposite direction, said escapement mechanism comprising an abutment bar and a cut-off bar movable transversely of the magazine and of the stock bars therein, the abutment and cut-off bars being reciprocally movable and formed with racks on opposing sides thereof, an upright shaft having a pinion meshing on the opposite sides with said racks, a carriage for the shiftable section, means for actuating the carriage, and motion transmitting means between the carriage and the shaft and operable upon movement of the carriage to effect oscillation of said shaft.

2. A magazine and delivery mechanism for bar feeds for metal working machines, said mechanism comprising the stock bar guide of a bar feed machine, said guide including a cradle section formed with a lengthwise slot and a closure section for the slot, an upright magazine for the stock bars, the closure section and the cradle section being normally in position to close the slot, one section being mounted to shift sidewise relatively to the other section and to the magazine out of and into position to open and receive a stock bar from the magazine and close the slot, and escapement mechanism to deliver the stock bars one by one from the magazine to the open slot during the shifting of the shiftable section in one direction and to close the slot during return shifting of the shiftable section in the opposite direction, a carriage for the shiftable section, means for actuating the carriage, and motion transmitting means between the carriage and the escapement mechanism, said escapement mechanism comprising an abutment bar and a cut-off bar movable transversely of the magazine and of the stock bars therein, the abutment and cut-off bars being reciprocally movable and formed with racks on opposing sides thereof, an upright shaft having a pinion meshing on the opposite sides therewith with said racks, the upright shaft also being an additional pinion, and the carriage having a transverse rack meshing with the last additional pinion.

3. A magazine and delivery mechanism for bar feeds for metal working machines, said mechanism comprising the stock bar guide of a bar feed machine, said guide including a cradle section formed with a lengthwise slot and a closure section for the slot, an upright magazine for the stock bars having its lower end located to discharge through the slot, the cradle section being mounted to shift and carry the slot into and out of position to receive a bar from the magazine and into and out of position to open and close the slot, and an escapement mechanism to deliver the stock bars one by one from the magazine through the open slot during the shifting of the cradle section, a carriage for the cradle section, said escapement mechanism comprising an abutment bar and a cut-off bar movable transversely of the mechanism and of the stock bars therein, the abutment and cut-off bars being reciprocally movable and formed with racks on opposing sides thereof, an upright shaft having a pinion meshing on opposite sides with said racks, and motion transmitting means operable to effect actuation of the carriage and oscillation of said shaft in timed relation.

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