

No. 757,604.

PATENTED APR. 19, 1904.

V. E. EDWARDS.
APPARATUS FOR CUTTING METAL BARS.

APPLICATION FILED DEC. 15, 1902.

NO MODEL.

Fig. 1.

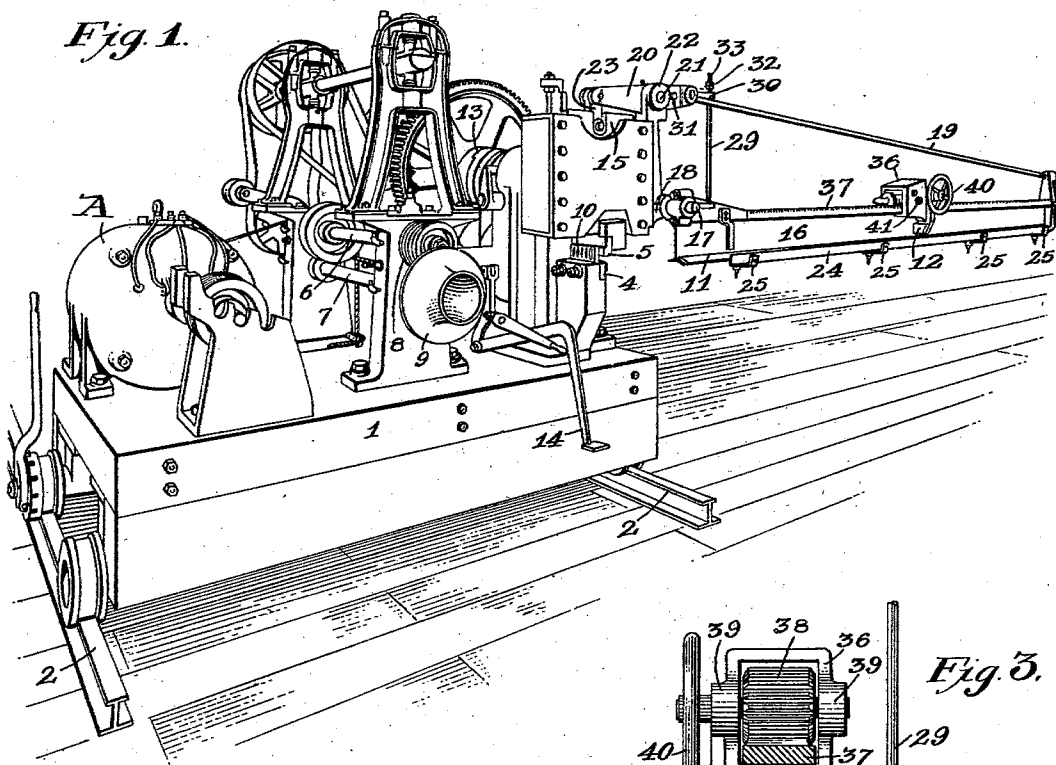


Fig. 5.

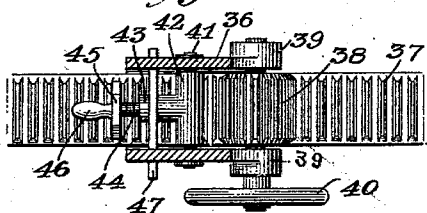


Fig. 3.

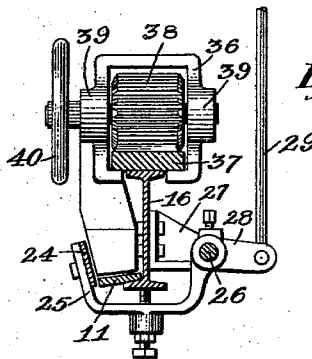


Fig. 4.

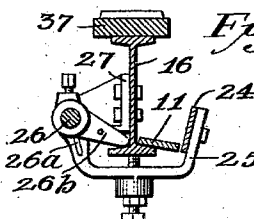
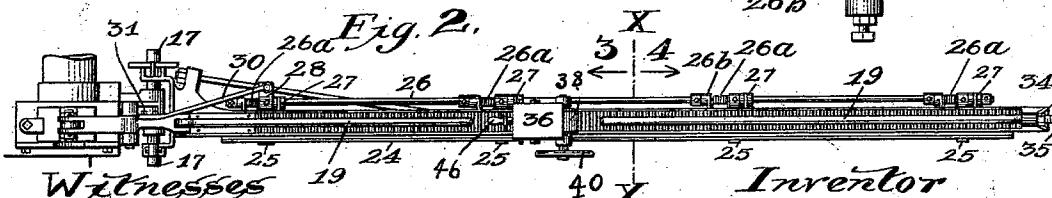


Fig. 2.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR CUTTING METAL BARS.

SPECIFICATION forming part of Letters Patent No. 757,604, dated April 19, 1904.

Application filed December 15, 1902. Serial No. 135,245. (No model.)

To all whom it may concern:

Be it known that I, VICTOR E. EDWARDS, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Apparatus for Cutting Metal Bars, of which the following is a specification, accompanied by drawings forming a part of the same, in which—
Figure 1 represents one of my improved apparatus for cutting metal bars, shown in perspective view. Fig. 2 is a plan view of the swinging platform for supporting the piece severed from the bar. Fig. 3 is a sectional view on line X X, Fig. 2, looking in the direction of the arrow 3. Fig. 4 is a sectional view on line X X, Fig. 2, looking in the direction of the arrow 4. Fig. 5 is a top view in section of the adjustable stop for determining the length of the severed bar.

Similar figures and letters of reference refer to similar parts in the different views.

My present invention relates particularly to that part of an apparatus for cutting metal bars by which the piece cut from the bar is supported and its length determined; and it consists in providing means for the adjustment of the stop or gage plate and for supporting and releasing the severed piece, as hereinafter described, and set forth in the annexed claims.

Referring to the accompanying drawings, 1 denotes a platform car or truck upon which the cutting and feeding mechanisms are mounted, said car being supported upon wheels by which it is adapted to be moved along the rails 2 2 transversely to a series of pockets or bins containing the bars to be cut. The bar to be cut is fed longitudinally between a stationary shear-blade 4 and a reciprocating shear-blade 5 by a pair of positively-driving rolls carried upon the rotating shafts 6 and 7. The upper roll in said pair is represented at 8, but the lower roll is hidden from view behind the capstan 9. As the bar is fed forward by the action of the feed-rolls it is projected through one of the openings in

the perforated plate 10 between the shear-blades 4 and 5 and over the supporting-platform 11 until its advancing end strikes against an adjustable stop 12, held in a fixed position at the proper distance from the shear-blades 4 and 5 to give the desired length to the severed bar. When the bar has been moved forward against the stop 12, the cutting apparatus is connected with a motor A or other driving power by a clutch 13, controlled by the attendant by means of the foot-treadle 14, to give a reciprocating movement to the ram 15, which carries the upper shear-blade 5 downward past the stationary blade 4 and returns it to its highest position ready for the next feeding movement of the bar. The feeding and cutting mechanisms above described, however, form no part of my present invention, as they are in common use, and their construction and operation will be well understood by those conversant with this class of machines. My present invention relates to the construction and method of adjustment of the stop 12 and to the method of supporting the forward end of the bar during the operation of cutting and of releasing the severed piece as soon as the cutting has been completed.

The forward end of the bar when pushed by the feeding mechanism between the shear-blades 4 and 5 against the stop 12 is carried over a supporting-platform 11, which consists of a plate attached to the lower flanged edge of an I-beam 16, one end of which is pivoted at 17 upon a bracket 18, attached to the framework of the shear, and its opposite end is connected by a brace-rod 19 with one end of a rocking lever 20, pivoted at 21 in bearings 22, supported on the fixed framework and having its opposite end pivotally connected by a link 23 with the reciprocating ram 15 of the shear. The connection of the I-beam 16 with the rocking lever 20 causes the outer end of the I-beam to be raised as the shear-blade 5 descends to sever the bar, and as the shear-blade 5 is returned to its highest position the outer end of the I-beam 16 is lowered to bring the

platform 11 into its normal and horizontal position to receive the advancing end of the bar at the next feeding movement.

In front of and above the plane of the platform 11 is a retaining-plate 24 attached to the free ends of bent arms 25, which extend beneath the I-beam 16 and are attached to a rocking shaft 26, journaled in bearings supported by brackets 27, attached to the rear side of the I-beam 16. The rocking shaft 26 is provided with an arm 28, which is connected by a link 29 to an arm 30, attached to the rocking lever 20 by bolts 31 and forming an extension thereof, so that the rocking motion of the lever 20 will serve to rock the shaft 26 simultaneously with the rocking motion of the I-beam 16 in order to depress the retaining-plate 24 below the plane of the platform 11 at the same time the outer end of the I-beam 16 is raised, when the jar imparted to the severed piece by the action of the reciprocating shear-blade causes it to be shaken off the inclined upper surface of the platform 11. Simultaneously with the depression of the retaining-plate 24 the lifting of the free end of the I-beam 16 swings the stop-plate 12 around the pivot 17, and thereby increases the distance between the stop-plate 12 and the shear-blades, so that the bar is relieved from the pressure against the stop-plate caused by the end thrust of the bar incident to the operation of shearing, especially when the shearing-blades have become dull. The upward movement of the shear-blade reverses the motion of the lever 20 and restores the stop-plate 12 to its normal position. The link 29, attached to the arm 28, passes through the arm 30 and carries on its upper end adjusting-nuts 32, by which the rock-shaft 26 is moved to depress the retaining-plate 24. As the arm 30 is depressed by the upward movement of the ram 15 the rock-shaft is reversed to carry the retaining-plate into its normal position by the action of torsional springs 26^a, attached at one end to the arms 25 on the rock-shaft and at their opposite end to arms 26^b, which bear against the I-beam or are otherwise held from turning. The direct connection between the outer end of the I-beam 16 and the rock-shaft 26 with the upper end of the reciprocating ram 15 of the shear by means of the rocking lever 20 secures the simultaneous movement of the bar supporting and controlling devices with the cutting mechanism by a direct, simple, and cheap construction which provides accessible and simple means of adjustment. The movement of the rocking shaft 26 is adjusted by means of nuts 32, carried upon the screw-threaded end 33 of the link 29, and the movement of the I-beam 16 is adjusted by means of a nut 34, carried upon the screw-threaded end 35 of the connecting-rod 19.

The stop-plate 12 is attached to a frame 36 and is adjustably held at the proper distance from the shear-blades to give the desired

length to the severed piece by means of a rack-bar 37, supported on the I-beam 16 and engaged by a pinion 38, journaled in bearings 39 upon the frame 36 and capable of being rotated by a hand-wheel 40 for the purpose of moving the frame 36 and attached stop-plate 12 along the rack. Pivoted in the frame 36 upon a rod 41 is a T-shaped bar 42, having an internally-screw-threaded stem 43, which receives a screw-threaded rod 44, provided with a flanged head 45, adapted to drop between and engage the teeth of the rack 37, and a handle 46 for lifting the head 45 out of engagement with the rack. The head 45 is locked in engagement with the rack-teeth by means of a bar 47, preferably tapering or wedge-shaped, which is inserted through holes in the frame 36 and bears upon the stem 43 of the pivoted T-shaped bar 42. The stop-plate 12 is adjusted along the I-beam by means of the pinion 38 at the proper distance from the shear-blades 4 and 5 when the head 45 of the locking mechanism is adjusted to fall between the teeth of the rack. The T-shaped bar 42 and screw-threaded rod 44, provided with a flanged head 45, forms a latch for locking the stop-plate in fixed position to determine the length of the piece severed from the bar, and the latch is adjustable relatively to the stop-plate in order to enable a more minute adjustment to be secured than that afforded by the spaces between the teeth.

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

1. In an apparatus for cutting metal bars, the combination with the cutting mechanism, comprising a reciprocating ram provided with a cutting-blade, of a pivoted platform for supporting the piece severed from the bar, an intermediate pivoted lever connected with said reciprocating ram, and also connected with said bar-supporting platform whereby said platform is rocked simultaneously with the operation of cutting, substantially as described.

2. The combination in a bar-cutting mechanism, comprising a reciprocating ram and a shear-blade, of a swinging bar carrying a stop-plate for determining the length of the severed piece, a pivoted lever, connected at one end with said reciprocating ram and at the opposite end with said swinging bar whereby the distance between the stop-plate and the cutting mechanism is varied to release the severed piece, substantially as described.

3. In a machine for cutting metal bars, the combination with a pair of shear-blades, of a bar provided with rack-teeth, a frame adjustable along said bar, a pinion journaled in said frame and engaging the teeth of the bar, a pivoted latch carried by said frame and engaging said rack-teeth, and means for locking said latch from disengagement, substantially as described.

4. In a machine for cutting metal bars, the

combination of a rack-bar, a frame movable on said bar, a stop-plate carried by said frame, a pivoted latch-lever carried by said frame and engaging the teeth of the rack-bar, said latch-lever being adjustable relatively to said frame, substantially as described.

5 5. The combination of a rack-bar, a frame movable thereon, a stop-plate carried by said frame, a T-shaped bar pivotally connected
10 with said frame and having an internal screw-thread, a screw-threaded rod held in said bar and provided with a flanged head adapted to engage the teeth of said rack, substantially as described.

15 6. The combination of a rack-bar, a frame movable thereon, a latch-lever pivoted on said frame and having means of adjustment relatively thereto, a tapering bar by which said lever is held in engagement with the teeth of
20 said rack-bar, substantially as described.

7. In a mechanism for cutting metal bars, the combination with a platform for supporting the piece severed from the bar, of a retaining-plate, at the side of said platform, and means
25 for moving said retaining-plate below the plane of the supporting-platform, substantially as described.

8. In a mechanism for cutting metal bars, an inclined platform for supporting the piece severed from the bar, a retaining-plate at the lower
30 side of said platform, and means for depressing said retaining-plate to release the bar, substantially as described.

9. In a machine for cutting metal bars, the combination with a platform for supporting the piece severed from the bar, of a retaining-plate carried on the free ends of arms, attached to a rock-shaft, a rock-shaft and means for
35 rocking said shaft simultaneously with the completion of the cutting operation, whereby said retaining-plate is depressed to release the severed piece, substantially as described.

10. In a machine for cutting metal bars, the combination with a platform for supporting the piece severed from the bar, of a retaining-plate whereby the severed bar is held from
45 sidewise movement on said platform, means for depressing said plate below the plane of the platform, and a spring for restoring the retaining-plate to its normal position, substantially as described.

11. In a machine for cutting metal bars, the combination with the cutting mechanism comprising a reciprocating ram, of a pivoted lever connected with said reciprocating ram, a platform for supporting the piece severed from the bar, said platform being pivoted at one end, a stop adjustable on said platform and a connecting-rod between the free end of said platform and said pivoted lever, substantially as described.

12. In a machine for cutting metal bars, the combination with the cutting mechanism comprising a reciprocating ram, of a pivoted lever connected with said ram, a platform for supporting the severed piece cut from the bar, said platform being pivoted at one end, a stop adjustable on said platform and an adjustable connection between the free end of said platform and said pivoted lever, substantially as described.

13. In a machine for cutting metal bars, the combination with the cutting mechanism, of a platform for supporting the piece severed from the bar, a retaining-plate, an adjustable connecting mechanism between said retaining-plate and the cutting mechanism whereby said plate is moved to release the severed piece, substantially as described.

Dated this 10th day of December, 1902.

VICTOR E. EDWARDS.

Witnesses:

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