

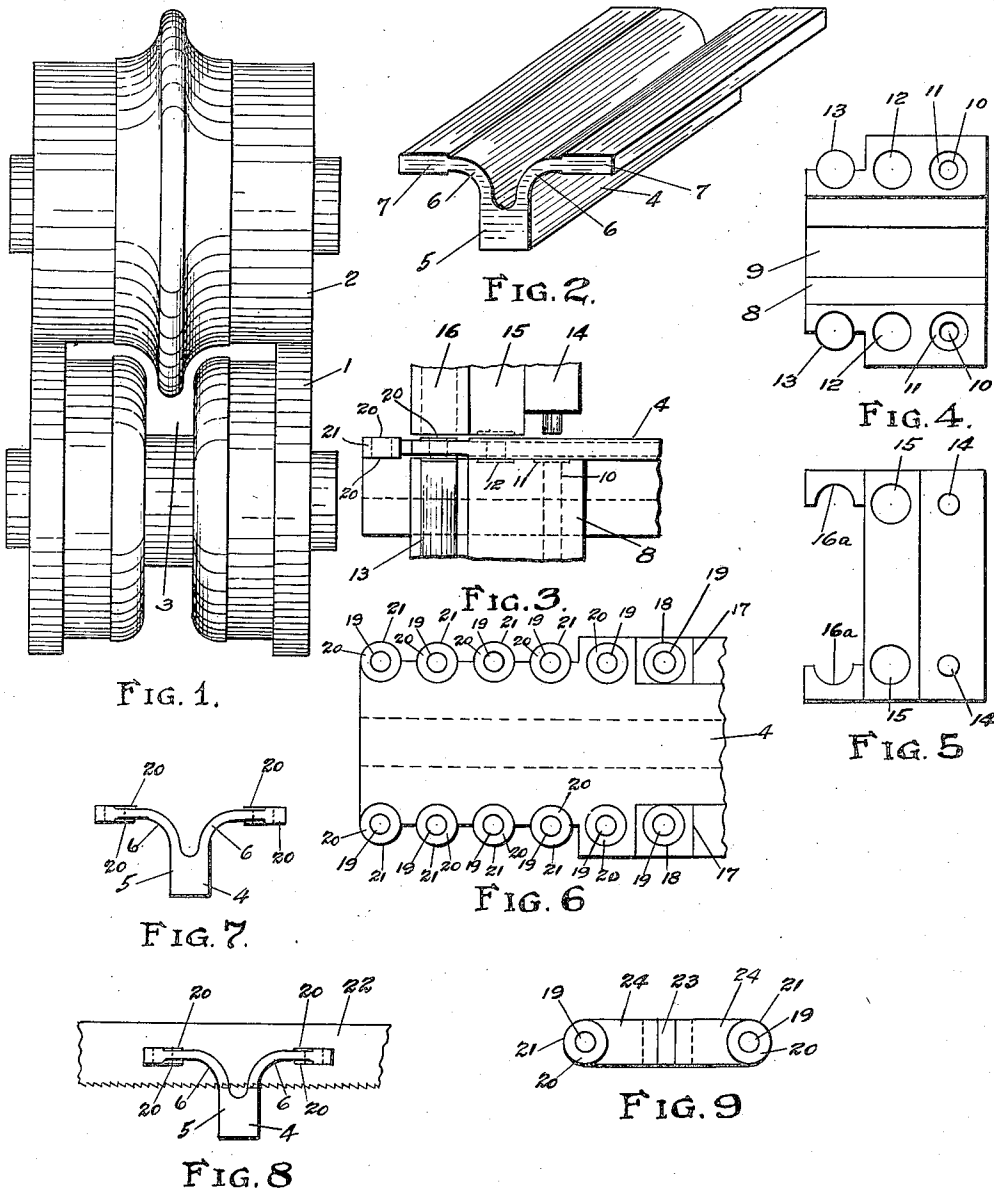
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1,997,871

METHOD OF FORMING CLEVISES

Original Filed Dec. 3, 1930 2 Sheets-Sheet 1



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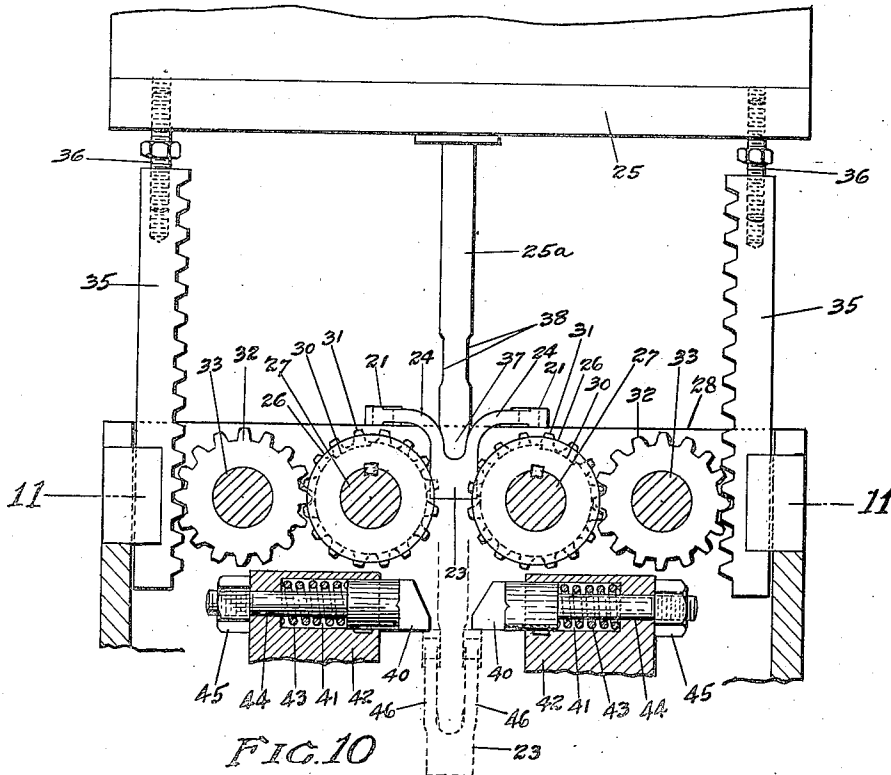


FIG. 10

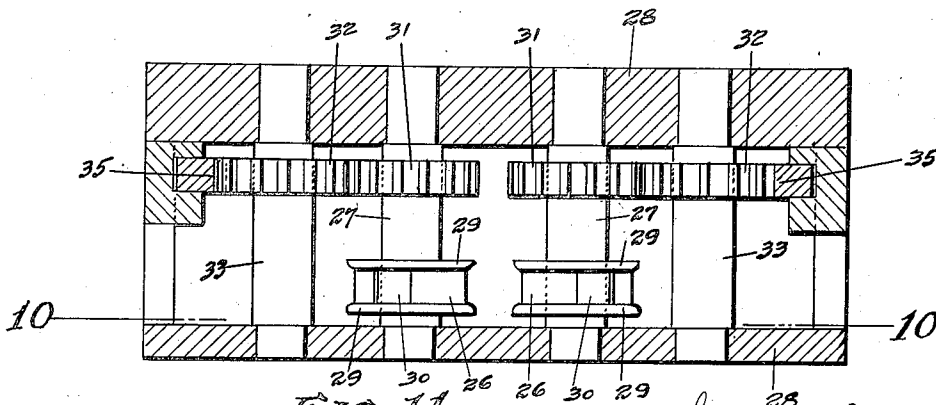


FIG. 11

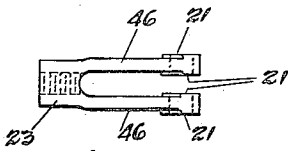


FIG. 12

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METHOD OF FORMING CLEVISES

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12 Claims. (Cl. 29—148)

Commonly clevises are formed by casting, drop forging, or stamping, with included strengthening parts in the head. The present invention involves a departure from the prior methods in that we roll a bar containing a longitudinal rib corresponding to the head of the clevis, flaring sides corresponding to the sides of the clevis, and edge ribs which may be utilized for forming the bearing surfaces at the ends of the sides. With such a blank, or bar, we form the ends of the clevis and perforate it and then sever the bar at intervals corresponding to the width of the clevis. We then straighten the sides with a rolling action, the rollers breaking the edges formed by the perforation. In this way we get a practically finished clevis with the exception of the hole through the head and form the clevis of the most desired proportions and at a cost considerably below clevises having the same characteristics. Features and details of the invention will appear from the specification and claims.

The finished clevis and the apparatus for forming it are illustrated in the accompanying drawings as follows:—

Fig. 1 shows a front elevation of a pair of forming rolls.

Fig. 2 a perspective view of the finished bar.

Fig. 3 a front elevation of the punch and coining press.

Fig. 4 a plan view of the bottom die of the press.

Fig. 5 a bottom view of the punch and coining dies.

Fig. 6 a plan view of the bar partially formed.

Fig. 7 an end view of the formed bar.

Fig. 8 an end view showing the manner of severing the bar to form the clevis units.

Fig. 9 a plan view of one of the units.

Fig. 10 a sectional view on the line 10—10 in Fig. 11 showing the rolls for straightening the sides of the clevis unit.

Fig. 11 a section on the line 11—11 in Fig. 10.

Fig. 12 a plan view of the finished clevis.

Ordinary rolls 1 and 2 are provided, these rolls having a finishing pass 3, the rolls forming a bar 4, as shown in Fig. 2. The bar 4 has a longitudinal rib 5 corresponding in shape to the clevis head, the sides 6 corresponding to the sides of the clevis, these sides flaring relatively to each other and edge ribs 7, the faces of these ribs being preferably in the same plane.

The press has a bottom die 8. This is provided with a central guide 9 receiving the rib 5 and sides 6 and is provided with a punch die opening

10 and an initial coining socket 11. Spaced from these are the coining dies 12 and again spaced from these are the sheared edges 13.

The plunger of the press has a punch 14 operating with the opening 10. The next plunger 15 is provided with a coining socket opposing the socket 12 and the plunger 16 having a shear face 16a operating in relation to the shear 13. The bar progresses through the press, one step at a time, and with the first operation of the punch, 10 as shown in Fig. 3, depresses the rib at 17, leaving a slight raise 18 and punching the opening 19. With the next step under the plunger 15 a coined bearing projection 20 is completed. With the next step the edge is trimmed along the edge 21 of the projection 20. At the completion of this operation in the press the bar has a form as shown in Fig. 7.

The bar is then severed by any preferable instrument, as; for instance, a saw 22, as shown in Fig. 8. This provides the clevis units with a head 23, the flanged sides 24, the coined bearing projections 21 and perforations 19, as shown in Fig. 9. The next step is to flatten the sides and thus complete the form for the turnbuckle. This is accomplished with the apparatus shown in Figs. 10 and 11. A plunger 25 carries the forming head 25a. Straightening rolls 26—26 are arranged oppositely to each other, the pass between these rolls being just equal to the cross dimension of the head 23. These rolls are fixed on shafts 27 and these shafts are journaled in side plates 28. The rolls are provided with beveled flanges 29 which are adapted to engage the severed edges of the sides and break the corners. The rolls are provided with sockets 30 adapted to receive the bearing projections 21. The shafts 27 are provided with gears 31 which mesh with gears 32. The gears 32 are carried on shafts 33 journaled in the side plates 28 and mesh with racks 35, these racks being secured by studs 36 with the plunger 25, the studs providing a means of adjustment of the racks and consequently of the rolls. The head 25a has the forming end 37 which fits between the sides and against the head 23 of the unit. The unit is placed in the pass, the plunger descends and as it reaches the unit starts the unit into the pass. The rolls travel with the same surface speed as the plunger and consequently the head carries the unit through the pass, the rollers exerting sufficient pressure not only to straighten the sides but to break down the corner of the sides. The bearing projections of the sides enter the sockets 33 on the plunger head and the opposite bearing projections enter

the depressions 30 in the rollers. The straightened unit proceeds below the pass between two catches 40. These catches are slidably mounted in sockets 41 in blocks 42 and are yieldingly forced forward by springs 43, the shanks 44 of the catches extending through the blocks and being provided with nuts 45 to limit the forward movement of the catches. On the return movement of the plunger these catches engage the sides of the clevis and the head 25 is withdrawn, the metal yielding to permit the projections to pass out of the depressions 38.

With this the clevis is finished with the exception of forming an opening in the head. The finished clevis is shown in Fig. 12 and is provided with the head 23, the straightened sides 46 and the sides having the bearing projections 21 and being provided with perforations.

What we claim as new is:—

1. The method of forming clevises which consists in forming a bar with a longitudinal unitary clevis head-forming rib and clevis side plates extending from said rib in the general direction which the sides take in the finished clevis at a point of juncture with the head, and separating the bar into clevis units.

2. The method of forming clevises which consists in forming a bar with a longitudinal unitary clevis head-forming rib and side plates projecting from the rib and extending laterally therefrom, bending the side plates into approximately parallel relation, and severing the bar into clevis units.

3. The method of forming clevises which consists in forming a bar with a longitudinal unitary clevis head-forming rib and side plates projecting from the rib and extending laterally therefrom, bending the side plates into approximately parallel relation, and severing the bar into clevis units, the severing of the bar preceding the bending of the side plates.

4. The method of forming clevises which consists in forming a bar with a longitudinal head-forming rib and side plates extending from the rib with the outer edges of the side plates in approximately the same plane, fashioning the edges of the side plates for clevis ends, bending the side plates into approximately parallel relation, and severing the bar into clevis units.

5. The method of forming clevises which consists in forming a bar with a longitudinal head-forming rib and side plates extending from the rib with the outer edges of the side plates in approximately the same plane, fashioning the edges of the side plates for clevis ends, severing the bar into clevis units and bending the side plates into approximately parallel relation.

6. The method of forming clevises which consists in forming a bar with a longitudinal unitary clevis head-forming rib and clevis side plates extending from said rib in the general direction

which the sides take in the finished clevis at the point of junction with the head, said side plates extending in flaring relation to each other laterally from the head, bending the plates into approximately parallel relation, and severing the bar into clevis units.

7. The method of forming clevises which consists in forming a bar with a longitudinal unitary clevis head-forming rib and clevis side plates extending from said rib in the general direction which the sides take in the finished clevis at the point of junction with the head, said side plates extending in flaring relation to each other laterally from the head, bending the plates into approximately parallel relation, and severing the bar into clevis units, the bending of the plates preceding the severing of the bar.

8. The method of forming clevises which consists in forming a bar with a longitudinal unitary clevis head-forming rib and clevis side plates extending from said rib in the general direction which the sides take in the finished clevis at the point of junction with the head, said side plates extending in flaring relation to each other laterally from the head, fashioning the edges of the side plates for clevis ends, bending the side plates into approximately parallel relation, and severing the bar into clevis units.

9. The method of forming clevises which consists in forming a bar with a longitudinal unitary clevis head-forming rib with side plates projecting from the bar and extending laterally therefrom and with clevis end-forming ribs along the edges of said plates, bending the plates into approximately parallel relation, and severing the bar into clevis units.

10. The method of forming clevises which consists in forming a bar with a longitudinal unitary clevis head-forming rib with side plates projecting from the bar and extending laterally therefrom and with clevis end-forming ribs along the edges of said plates, fashioning the edges of the side plates for clevis ends, bending the plates into approximately parallel relation, and severing the bar into clevis units.

11. The method of forming clevises which consists in forming a bar with a longitudinal unitary clevis head-forming rib with side plates projecting from the head and extending laterally therefrom, severing the bar into units, and bending the side walls of the units into parallel relation by rolling.

12. The method of forming clevises which consists in forming a bar with a longitudinal unitary clevis head-forming rib with side plates projecting from the head and extending laterally therefrom, severing the bar into units, bending the sides of the units into parallel relation, and breaking down the corners of said sides by rolling.

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