Sept. 5, 1933. E. M. SUMMERHAYS 1,925,119

METHOD OF MAKING A CONNECTING BAR

Filed July 11, 1930

Fig. 1

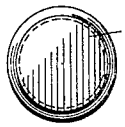


Fig. 2

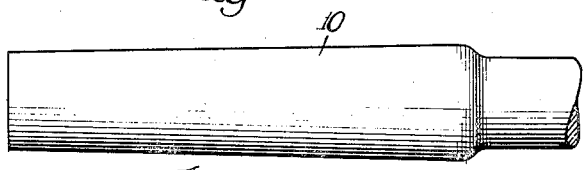


Fig. 3

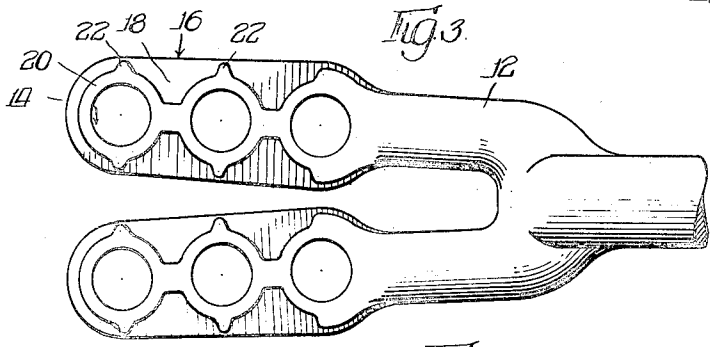


Fig. 4

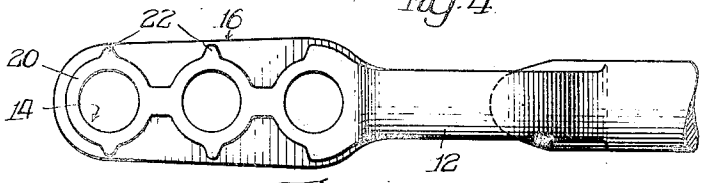


Fig. 5

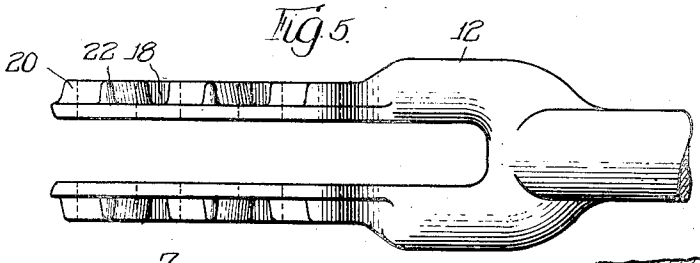


Fig. 6

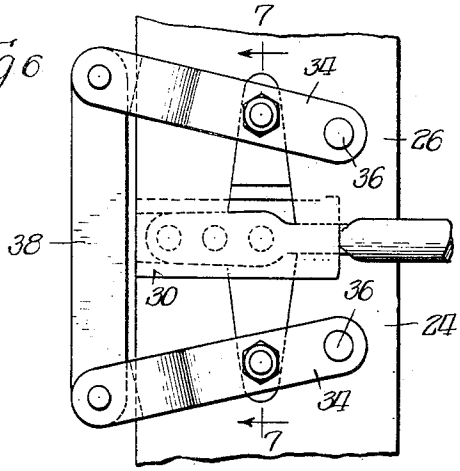
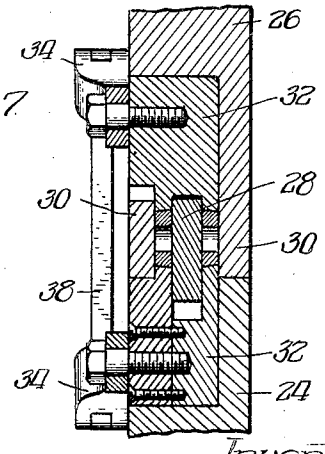


Fig. 7



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METHOD OF MAKING A CONNECTING BAR

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Application July 11, 1930. Serial No. 467,176

5 Claims. (Cl. 29—152.1)

This invention relates to the process of making connecting bars such as may be used, for example, as brake rods.

One object of the invention is to provide a connecting rod which is stronger and constructed more cheaply than connecting rods heretofore known.

Another object of the invention is to provide a process for making connecting rods more cheaply and efficiently than has heretofore been possible.

An additional object is to produce a simple strong connecting bar without welds, with the fewest possible operations and at the lowest possible cost.

The following description will be more readily understood by referring to the accompanying drawing, in which—

Figure 1 is an end elevation of the blank from which the connecting bar is made;

Figure 2 is a side elevation thereof;

Figure 3 is a plan view of the bar prior to the twisting;

Figure 4 is a side elevation of the bar after the twisting;

Figure 5 is a plan view of the completed bar;

Figure 6 is an elevation of the twisting tool, and

Figure 7 is a vertical section of the twisting tool with the bar in its twisted position.

In accordance with my invention the connecting bar is formed from a blank 10, approximately of the shape shown in Figures 1 and 2. This bar may be formed very cheaply from steel or other metals by well-known processes. The blank 10 is reshaped to the form shown in Figure 3 preferably by dropforging. The steps are, first—a flattening of the end portion, then a separation of the two forks and a rounding of the leg portions 12 together with a formation of the holes 14 in the jaws 16. In order to save weight, the jaws are recessed as at 18 but bosses 20 are left around the pin holes 14 for the sake of increased strength and wearing properties. Lugs 22 are preferably provided as lateral extensions of the bosses in order to furnish a firm seat substantially the entire width of the jaw 16 to aid in the twisting operation. The leg portions 12 are preferably rounded in order that they may be twisted without showing their distortion to an undesirable extent. The jaws may be twisted while hot from the positions shown in Figure 3 to those shown in Figure 5 in any desired manner, but that shown in Figures 6 and 7 is believed to be simplest in that there is but a single operation.

The tool used in this twisting operation includes a stationary die 24 and a movable die 26. The former includes a mandrel 28 which is the width of the space between the jaws in the finished product and hence is wider than the space between the jaws in the semi-finished blank shown in Figure 3. The upper member 26 includes the twisting extensions 30. The semi-finished blank in Figure 3 is rested, centered transversely, on the mandrel whereupon the movable die is brought down so that its twisting extensions 30 bear on the outer sides of the jaws 16. The continued movement of the twisting extensions 30 twists the jaws to their final position and forces them into contact with the sides of the mandrel 28, thus insuring their proper spacing.

Ejectors 32 are provided in each of the twisting dies and are so arranged that as the tool opens the ejectors are moved outwardly from their respective dies ejecting the connecting bar so that it may be easily removed. The construction of the ejector mechanism is quite simple. It comprises two links 34, each of which is pivoted to one of the ejectors at points spaced from their ends and is pivoted at one end to the pivot 36 mounted on the die and at the other end to a common link 38. It is readily seen from Figure 6 that when the moving die member 26 moves away from the stationary die member 24, the ejectors 32 are restrained from being separated to the same extent that the die members are separated. The ejectors must be moved outwardly from the die members since the lower ejector is restrained from moving more than the given amount by the mandrel 28, and since the upper ejector is likewise restrained from moving more than the given amount by the twisting extension 30, both ejectors must be forced out in the course of opening up the die members. It is readily seen from the above description that through the practice of this invention a strong and durable connecting bar may be made exceedingly economically in a very few steps. From a rolled metal bar, the semi-finished blank is dropforged, the pin holes being formed in the forging operation. Then by one single stroke of the twisting tool, the jaws are twisted to their final position to complete the connecting bar.

Various modifications and changes may be resorted to in the particular arrangement of the connections and parts without departing from the spirit of the invention as expressed in the appended claims.

I claim:

1. The process of forming a connecting bar consisting in drop forging a solid blank to form

a semi-finished blank having spaced legs and having non-aligning holes in said legs and twisting said legs by moving the two sides thereof unequally by exerting a twisting action thereon with a single stroke of a twisting member in a single direction.

2. The process of forming a connecting bar consisting in drop forging a solid blank to form a semi-finished blank having spaced legs and having non-aligning holes in said legs, and having bosses around said holes, said bosses being extended laterally; and twisting said legs by moving the two sides thereof unequally by exerting a twisting action thereon with a single stroke of a twisting member applied in a single direction to said bosses and to their extended portions.

3. The method of forming a connecting bar having an integral clevis, consisting in drop forging a solid blank of substantially the length of the finished bar to form a semi-finished blank having spaced legs and having non-aligning holes in said legs, and twisting said legs to bring said holes into alignment, thereby forming a complete and finished connecting bar with clevis.

4. The method of forming a connecting bar having an integral clevis, consisting in drop forging the end portion of a solid blank which aside from the end portion is substantially the same as the finished rod aside from its clevis to form a semi-finished blank having spaced legs and having non-aligning holes in said legs, and twisting said legs to bring said holes into alignment, thereby forming a complete and finished connecting bar with clevis.

5. The method of forming a connecting bar having an integral clevis, consisting in drop forging the end portion of a blank in the form of a solid rolled rod which aside from the end portion is substantially the same as the finished rod aside from its clevis to form a semi-finished blank having spaced legs and having non-aligning holes in said legs, and twisting said legs to bring said holes into alignment, thereby forming a complete and finished connecting bar with clevis.

ELMER M. SUMMERHAYS.