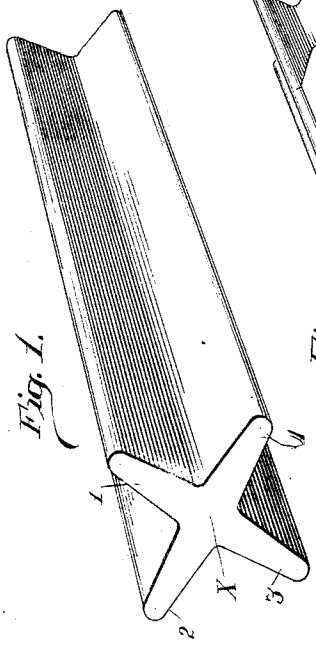
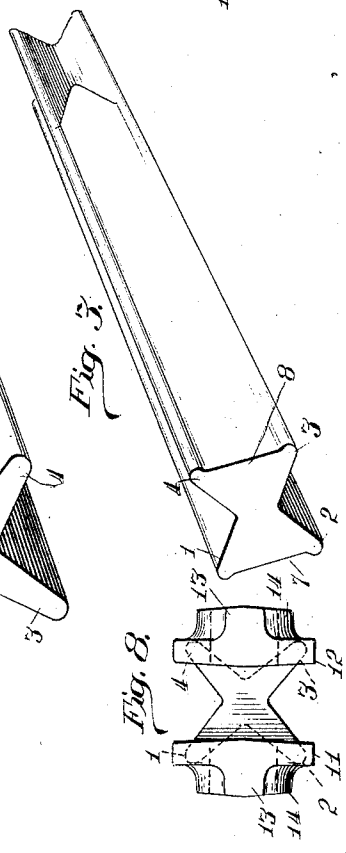
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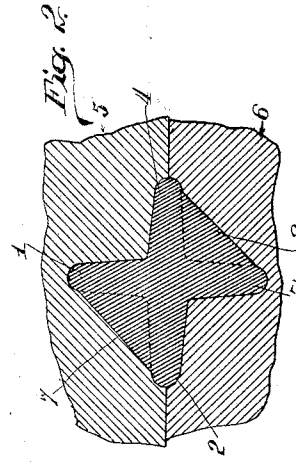
METHOD OF MAKING TRUCK LEVER CONNECTIONS

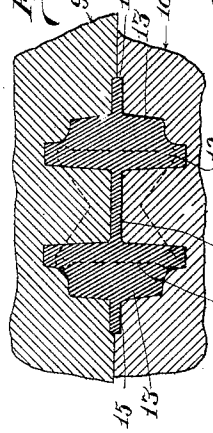
Original Filed Nov. 21, 1924

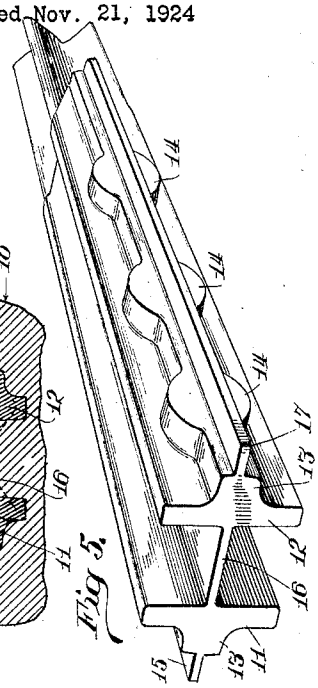


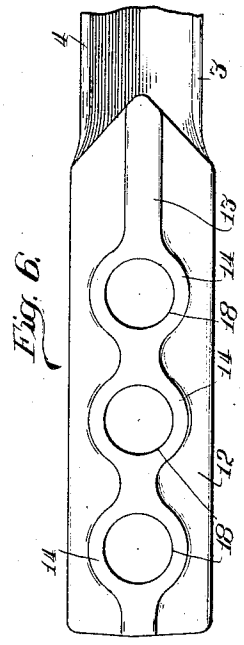


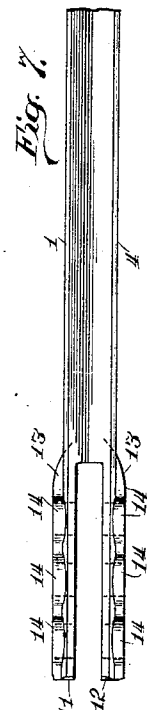


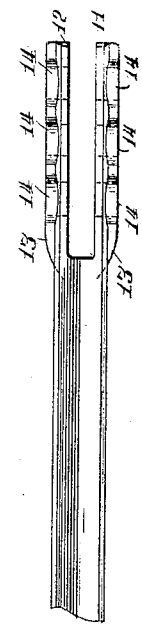












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UNITED STATES PATENT OFFICE.

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METHOD OF MAKING TRUCK LEVER CONNECTIONS.

Application filed November 21, 1924, Serial No. 751,314. Renewed March 2, 1927.

This invention relates to an improved truck lever connection, connecting bar, or the like, and to the method of making the same, these bars being particularly suitable for use in the operating mechanism of railway brakes, and other portions of railway rolling stock.

One object of this invention is to produce an improved form of single piece metal connecting bar, of peculiar configuration, which is lighter in weight and stronger than bars of round or angular cross section heretofore used.

Another object of the invention is to simplify the process of manufacturing these bars, whereby a series of the bars may be quickly and economically produced from a single rolled bar of metal of uniform cross-section from end to end.

According to the present invention, a considerable length of angle bar is rolled so as to have a uniform cross-section resembling a four-pointed star. The bar will comprise four similar flanges, radiating from a common center preferably at right angles to one another. In other words, the four flanges are formed symmetrically about two planes crossing one another at right angles along the center line of the bar. Sections of this bar, somewhat longer than the desired length of the connecting bar to be formed, are cut from the rolled metal beam and integral clevises are formed at one or both ends of each bar section, by an upsetting and forging process hereinafter described in detail.

The objects and advantages of the invention will be more apparent from the following detailed description of one approved form of the connecting bar, and the preferred method by which said bar is produced.

In the accompanying drawings:

Fig. 1 is a perspective view of a section of the rolled metal stock from which the bars are made.

Fig. 2 is a transverse cross section through portions of the upsetting dies, in which the thickened end portions of the bar are formed, showing an end of the bar therein.

Fig. 3 is a perspective view of one end of the bar after this end has been upset as indicated in Fig. 2.

Fig. 4 is a cross section through the stamping dies for forming the clevis. The cross-section of this end portion of the bar before the stamping operation (as in Figs. 2 and 3), is indicated in Fig. 4 in dotted lines.

Fig. 5 is a perspective view of this end portion of the bar after the last stamping operation.

Fig. 6 is a side elevation of one of the end clevises of the completed bar.

Fig. 7 is a plan view, on a smaller scale, of the completed connecting bar.

Fig. 8 is an end view of the completed bar.

A uniform metal section, of considerable length, is first rolled in the form indicated in Fig. 1. This bar comprises four substantially equal flanges, 1, 2, 3 and 4, all radiating at right angles with one another, from a common center x. The flanges 1 and 3 are formed symmetrically, and in opposite directions from the center x, about one plane, and flanges 2 and 4 are similarly formed about a second plane which crosses the first mentioned plane at right angles along the center line x. It will be noted that this bar resembles a four-pointed star in cross-section, and for this reason will be hereinafter referred to as a star section.

This metal section is cut up into lengths somewhat longer than the connecting bars which are to be formed therefrom. An end portion of this bar is then upset between a pair of dies 5 and 6, as indicated in Fig. 2. These dies are formed to fit snugly between two pair of the flanges, such as 1 and 4, and 2 and 3, but are cut away between the flanges 1 and 2, and 3 and 4, whereby the upset metal will fill these openings, so that this end portion of the bar will now comprise two triangular portions 7 and 8, joined at their apexes along the center line of the bar, as indicated in Fig. 3.

This upset end portion of the bar is now subjected to a forging operation directed along the plane which bisects the angles formed between the two triangles 7 and 8, these angles corresponding to those between flanges 1 and 4, and 2 and 3, of the original bar. This operation is indicated in Fig. 4, the stamping dies being indicated at 9 and 10. By this operation, the metal will be squeezed from the form indicated in dotted lines, Fig. 4, to that shown in full lines in this figure. The cavities in the dies 9 and

10 are of such configuration that the end portion of the bar will now take the form indicated in Fig. 5. This end portion will comprise a pair of similar parallel side members 11 and 12, each having an outer longitudinal rib 13, and a series, here shown as three, of thickened portions 14, through which the bolt holes of the clevis are afterwards drilled. The flashings 15, 16 and 17, are now cut away, and the holes 18 drilled through the pairs of opposite thickened portions 14, and the clevis is then completed. Usually, such a clevis is formed at each end of the bar, as indicated in Fig. 7.

It will be noted that this connection bar, despite its peculiar configuration, is quite simply manufactured, there being but two stamping operations, and the necessary dies are simple and rugged. The finished connecting bar will have great strength and rigidity in proportion to its weight, which is considerably less than that of round bars of corresponding strength.

It will be noted that the side members 11 and 12 of the clevis outline a rectangle, and that the flanges 2 and 4 of the body portion of the bar lie substantially along one diagonal of this rectangle, and the flanges 1 and 3 along the other diagonal. These diagonally arranged flanges 1, 2, 3 and 4, of the body portion, offer great resistance to bending stresses, and form a wide, strong, anchoring base for the ends of the side members 11 and 12 of the clevis.

In the following claims, when the expression "star section" is used, it is to be construed as referring particularly to a bar of uniform cross-section of four-pointed star shape, as indicated in the drawing, and as hereinabove described.

While it is preferable to use a bar of the type described in detail hereinabove, it is not absolutely essential that the angles between the side flanges of the bar all be right-angles. That is, the opposing angles between flanges 2, 3 and 1, 4 could be either greater or less than the angles between flanges 1, 2 and 3, 4, thus, the connecting bar could be formed of greater width than height or vice versa, as might be desired. The dies need only be proportioned to receive stocks of either form, and the operations will otherwise be as described, hereinabove.

I claim:

1. The method of forming connecting bars which consists in subjecting the end of a metal bar or star cross-section, comprising four substantially equal flanges radiating at right angles with one another from a common center, to an upsetting operation whereby two opposite angles between the flanges are substantially filled with metal, and then subjecting this portion of the bar to a stamping operation directed in the plane of the bisector of the two open angles to form a pair of parallel side members of a clevis.

2. The method of forming connecting bars which consists in subjecting the end of a metal bar of star cross-section, comprising four flanges radiating from a common center, to an upsetting operation whereby two opposite angles between the flanges are substantially filled with metal, and then subjecting this portion of the bar to a stamping operation directed in the plane of the bisector of the two open angles to form a pair of parallel side members of a clevis.

3. The method of forming connecting bars, which consists in rolling a uniform metal bar of star cross-section, comprising four substantially equal flanges radiating at right-angles with one another from a common center, upsetting one end of the bar to substantially fill with metal two oppositely radiating angles between the flanges, and then subjecting this portion of the bar to a stamping operation directed in the plane of the bisector of the two open angles to form a pair of parallel side members of a clevis.

4. The method of forming connecting bars, which consists in rolling a uniform metal bar of star cross-section, comprising four substantially equal flanges radiating at right-angles with one another from a common center, upsetting one end of the bar to substantially fill with metal two oppositely radiating angles between the flanges, and then subjecting this portion of the bar to a stamping operation directed in the plane of the bisector of the two open angles to form a pair of parallel side members of a clevis, after which the flashings are cut away from the sides of and between the clevis members, and bolt-holes are drilled through the opposite side members of the clevis.

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