(No Model.)

T. L. RUSSELL.

ADJUSTABLE TAPERED WRIST PIN FOR CROSS HEADS.

No. 385,526. Patented July 3, 1888.

Fig. 1.

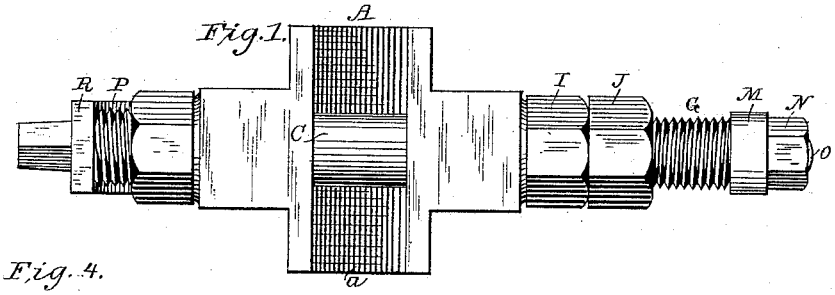


Fig. 4.

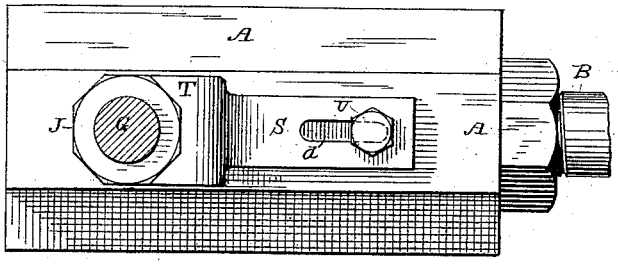
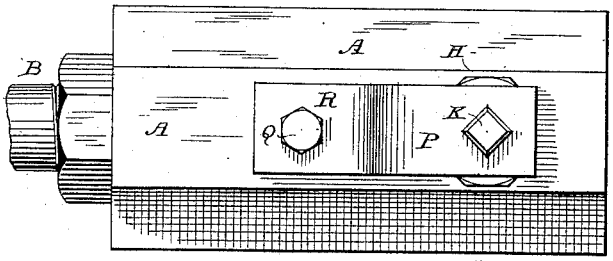


Fig. 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

THEODORE LEANDER RUSSELL, OF NEAR EMLENTON, PENNSYLVANIA.

ADJUSTABLE TAPERED WRIST-PIN FOR CROSS-HEADS.

SPECIFICATION forming part of Letters Patent No. 385,526, dated July 3, 1888.

Application filed December 30, 1887. Serial No. 259,391. (No model.)

To all whom it may concern:

Be it known that I, THEODORE LEANDER RUSSELL, residing near Emlenton, Venango county, Pennsylvania, have invented a new and Improved Adjustable Tapered Wrist-Pin for the Cross-Heads of Locomotives and other Engines, of which the following is a specification.

Ordinarily in locomotives and engines of a similar character the piston-rod is connected to a sliding cross head, to which the connecting-rod is pivotally connected. The cross-head straddles the end of the connecting-rod, which embraces a wrist-pin which is usually cast or otherwise integrally formed with the cross-head. The result is that with this construction all of the wear upon the wrist-pin takes place at two points—where it receives the thrust of the connecting-rod and on the opposite side therefrom.

The main object of this invention is to substitute for the fixed wrist-pin an improved adjustable tapered wrist-pin which can be easily and readily rotated in the cross-head, so as to present all portions of its periphery to the wear of the connecting-rod and without disturbing the boxes of the connecting-rod which inclose the wrist-pin.

The invention further comprises mechanism for rotating the wrist-pin a fixed distance, and also a nut-locking device for the nuts which retain the wrist-pin in place.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a front view of a cross-head provided with the improved wrist-pin. Fig. 2 is a plan, partly in section, of the same. Figs. 3 and 4 are side views looking, respectively, in the directions indicated by the arrows 3 and 4 in Fig. 2.

A is the cross-head, and B the piston-rod, the cross-head being formed so as to slide in the usual guides. The cross-head is somewhat thicker (or higher) than usual, so as to admit of its being bored crosswise to form the bearings for the wrist-pin shaft. The wrist-pin shaft, which is preferably of cast-steel, is comprised of a cylindrical portion, C, which extends across the open slot *a* in the cross-head, and which is embraced by the connecting-rod, and which constitutes the wrist-pin proper. On each side of this cylindrical portion are tapered sections D E, each at its point of junction with the cylindrical part C being of a greater diameter than the part C, so that shoulders *b b* are formed. The tapered sections D E are preferably continuations or frustums of the same cone, and the bore in the cross-head is tapered to receive them. The wrist-pin shaft extends on each side beyond the tapered portions, and the sections F G on either side are screw-threaded. The screw-threaded section F, adjacent the tapered section D, having the larger diameter, carries a loosening-nut, H, and the other screw-threaded section, G, carries a tightening-nut, I, and a jam-nut, J. When the wrist-pin shaft is first placed in position and the connecting-rod connected to it, the tightening-nut I is forced tightly against the cross-head, thus wedging the tapered sections D E into their conical seats and holding the wrist-pin shaft immovably in position. The jam-nut J is then turned tightly against the nut I, locking the same in place. When, however, the wearing-surfaces of the wrist-pin become worn and it is desirable to turn the shaft so as to bring other parts of the wrist-pin into position to receive the wear, the nuts I J are loosened. The loosening-nut H is then turned up against the cross-head, and rotation of it when in contact with the cross-head forces the tapered sections away from their seats. The shaft may then be turned. The inner end of the shaft is contracted and is formed with a smooth cylindrical portion, L, which constitutes a wrist-pin for a coupling-rod, M, which is connected so as to operate the feed-water pump. This rod is held on the shaft by means of a nut, N, fitting on an outer screw-threaded portion, O.

In order to facilitate the turning of the wrist-pin shaft, and to enable it to be turned a certain and proper distance, so that when the wrist-pin becomes worn a fresh unworn portion may be presented for wear, the outer end of the shaft has a tapered squared end, K. This end is polygonal in section, but is preferably square, though not necessarily so, and the shaft may be turned by any wrench which fits on said end. In order, however, that the shaft may be turned only when desired, and that when so turned it may be turned through a given arc, the end of the shaft is embraced by a polygonal tapered aperture, *c*, in a stay,

P, which is secured to the cross-head by a screw, Q. The aperture *c* is located in an outwardly-bent portion, R, of the stay, which is thus bent so as not to interfere with the turning of the loosening-nut H. When the squared end K of the shaft is thus held in the squared aperture *c* of the stay, the slight longitudinal movement of the shaft necessary to loosen the same is not interfered with; but the shaft cannot be rotated until the stay is removed. It is usually desired to rotate the stay a quarter of a revolution each time; hence the end K and aperture *c* are usually square. To rotate the shaft this distance, the screw Q is removed and the stay taken off and again inserted on the squared end, so that it stands perpendicular to the cross-head instead of parallel thereto, as usual. The stay is then turned down to its normal horizontal position and secured, thus turning the shaft just ninety degrees. When the shaft has been tightened in place, it is very desirable that the tightening-nut I and jam-nut J should be locked, so as not to be accidentally turned. These nuts are preferably octagonal. To lock the same a nut-locking bar, S, is provided having an open recessed face, T, conforming to three sides of the octagonal nuts. When the nuts are in place, the recessed face of the bar is brought to abut against the nuts, and the bar is held in position by a screw, U, passing through a longitudinal slot, *d*, in the bar and entering the cross-head. When it is desired to turn the nuts, the screw is simply loosened and the bar slipped back, so that the nuts may be free from the recessed face. To prevent the nut-locking bar from turning on the screw, the bar has a groove, *e*, on its inner face, which fits over a feather or projection, *f*, on the cross-head.

I claim as my invention—

1. A cross-head for locomotives and other engines having conical apertures extending laterally therethrough, and an adjustable wrist-pin shaft having conical sections which fit in said apertures, said shaft being extended on either side of the cross-head and screw-threaded, in combination with tightening and loosening nuts fitting on said shaft and seating against opposite sides of the cross-head, substantially as set forth.

2. A cross-head for locomotives and other engines and an adjustable wrist-pin shaft mounted therein, having a polygonal end, in combination with a stay removably secured to the cross-head, having a polygonal aperture which fits over said polygonal end, substantially as set forth.

3. A cross-head for locomotives and other engines, an adjustable wrist-pin shaft mounted therein, and a tightening nut or nuts for said shaft, in combination with a nut-locking bar secured to said cross-head, which abuts against said nut or nuts, substantially as set forth.

4. A cross-head for locomotives and other engines, an adjustable wrist-pin shaft mounted therein, and a tightening nut or nuts for said shaft, in combination with a nut-locking bar having a recessed face which abuts against said nut or nuts, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

THEODORE LEANDER RUSSELL.

Witnesses:
E. B. SHEFFER,
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