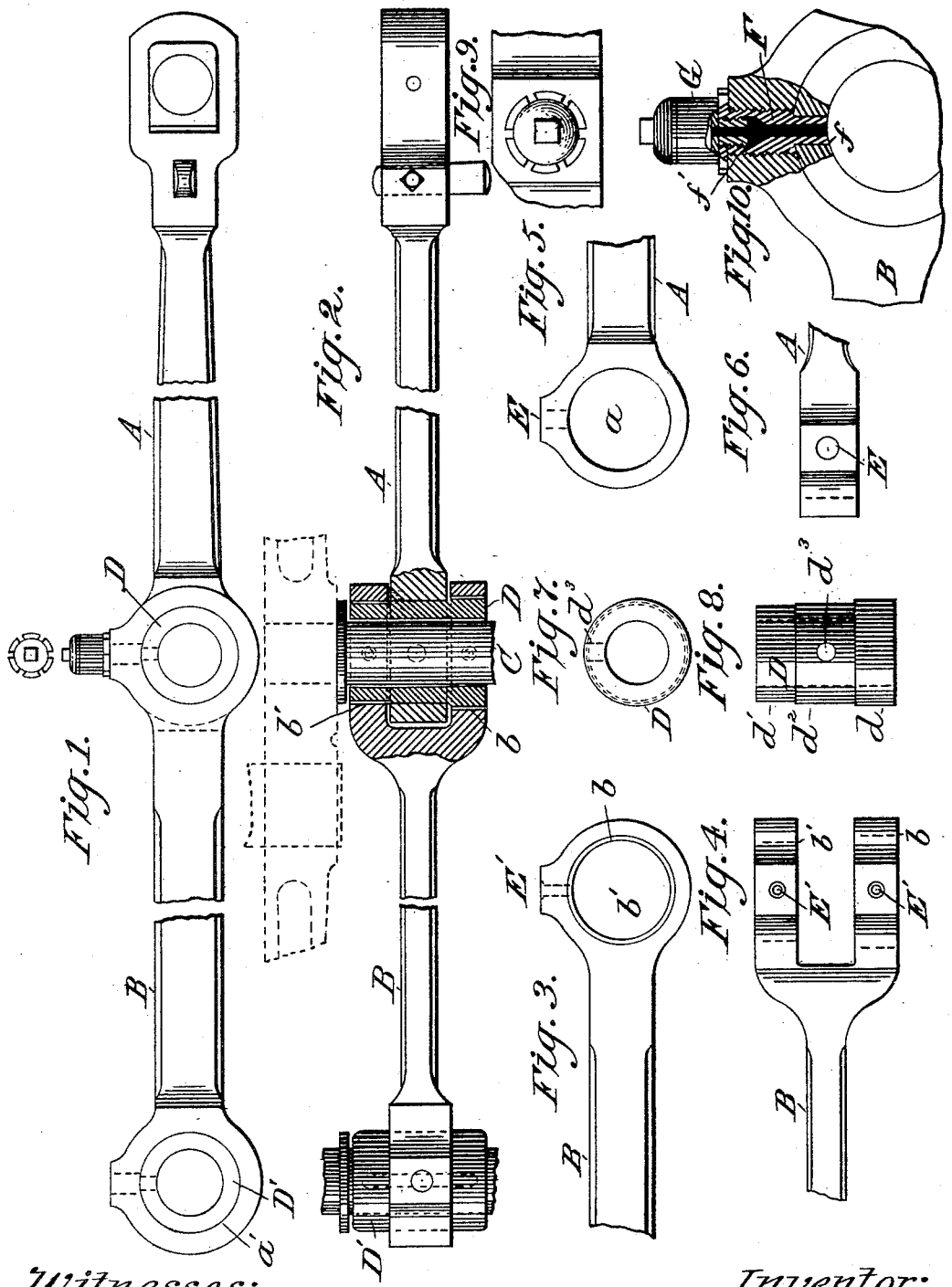
(No Model.)

L. H. KENYON.

CONNECTING ROD.

No. 459,097. Patented Sept. 8, 1891.



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UNITED STATES PATENT OFFICE.

LOWELL H. KENYON, OF ALLEGHENY, PENNSYLVANIA.

CONNECTING-ROD.

SPECIFICATION forming part of Letters Patent No. 459,097, dated September 8, 1891.

Application filed April 25, 1888. Serial No. 271,834. (No model.)

To all whom it may concern:

Be it known that I, LOWELL H. KENYON, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Connecting-Rods; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to the class of steam-engines known as "locomotives," and has for its object to present a greater wearing-surface to rods and crank-pins than heretofore used, and to more equally distribute the wear upon crank-pins and wearing-surface of rods than is now customary, and to avoid the use of the common knuckle-joint, which is expensive in manufacture, troublesome in use, and costly in repairs. To attain this end I use a sleeve or bushing, its internal diameter bored to slide on the crank-pin, its thickness being sufficient to resist all strain tending to close it on the pin, its outside diameter turned to receive the end of either rod, as may be desired, one with a forcing fit sufficiently tight to hold it in its position against all strains, the end of the other rod having an easy fit on the outside of the sleeve, thus increasing the wearing-surface three or four times that now in use.

In the accompanying drawings, Figure 1 is a side elevation of the right-hand main and parallel rods of an eight-wheeled locomotive. Fig. 2 is a plan of the same, the connection with the crank-pin of the main driver being in section. Fig. 3 is a side elevation, and Fig. 4 a plan, of the front end of the parallel rod. Figs. 5 and 6 are similar views of the rear end of the connecting-rod. Figs. 7 and 8 are views of the bushing. Fig. 9 is a plan, and Fig. 10 a vertical section, of the oil-cup.

The same letters refer to the same parts in all the views.

The main rod A is formed with a solid end, in which is bored a straight or slightly-tapering hole *a*. The parallel rod B has a fork at the front end, in the jaws of which are bored two holes *b b'*, the latter being somewhat smaller than the other. The back end of this rod is provided with an eye *a'*, similar to the eye *a* of the main rod. The eyes *a b b'* are considerably larger than the crank-pin C, as shown in Fig. 2, where a portion of the main driving-wheel, also, is shown in dotted lines. Surrounding the crank-pin and extending substantially the whole length of it is a bushing D, which is provided on the exterior with two cylindrical end portions *d d'* and a straight or slightly-tapering middle portion d^2, which is turned to a good forcing fit for the eye *a*, the other portions *d d'* being given, respectively, an easy-working fit for the eyes *b b'*.

To assemble the parts the end of the main rod is inserted between the jaws of the fork on the parallel rod, and the bushing is then forced into place in the eye of the main rod by hydraulic or other power, being therefore rigidly secured to the rod. In the same way the bushing D' for the rear crank-pin is forced into its eye *a'* in the back end of the parallel rod. The bushings are then slipped upon their respective crank-pins and a collar or cap secured upon the end of each pin to prevent the bushings and rods from coming off. The pressure exerted by the main rod is by this means distributed over the entire pin, while the wear of the parallel rod is distributed between the two surfaces *d* and *d'*.

To prevent the bushings D D' from working loose in their seats in the rods A and B, one or more holes E are drilled down through the top of the rod ends into the eyes *a a'*, that receive the bushings, and in the bushings are smaller holes d^3. The holes E are tapped and a hollow-screw-plug F is screwed into each one, having a smooth tenon *f*, that fits into the hole d^3 in the bushing. The head of the plug F is preferably provided with notches to facilitate its insertion or removal by means of a spanner.

E' are simple oil-holes in the forks of the rod B to oil the bearings *d d'*. An oil-cup G is screwed into the top of the plug F, from which oil is fed through the duct *f'* to the crank-pin C. The bushings cannot be removed from the rods until the plugs F have been taken out.

I have described my invention as applied to the main and parallel rods of an eight-

wheeled locomotive; but it is evident that it is equally applicable to mogul, consolidation, ten-wheeled, or any other class of engine, and that it dispenses with the expensive knuckle-joint now in use in the classes named. Furthermore, the improved bearing can be used on parallel rods only, or on one crank-pin only, if desired, the others being fitted with the ordinary strap and brasses, or any other suitable bearing. The position of the parts, moreover, may be reversed—that is, the fork may be on either of the rods.

The advantages of my invention have been set forth in part above, but in addition it should be stated that the crank-pin is not subjected to any shearing strain, and the bearing upon it is about twice as long as in the usual construction. The bushings last much longer and there is less danger of cutting and heating. The parallel rod is brought into line with the main rod, giving a direct pull.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a rod having an eye *a*, of a forked end containing the cylindrical eyes *b b'*, and a bushing D, having the cylindrical end portions *d d'* and the middle portion d^2, fitting the eye *a*, substantially as described.

2. The combination, with the rod having an eye and a hole E, of the bushing D, inserted in the eye and provided with a hole d^3, the hollow screw-plug F, having a tenon *f*, entering the hole d^3, and an oil-cup G, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

LOWELL H. KENYON.

Witnesses:

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