(No Model.) 2 Sheets—Sheet 1.

W. WRIGHT.

ENGINE CROSS HEAD.

No. 475,428. Patented May 24, 1892.

Fig. 3.

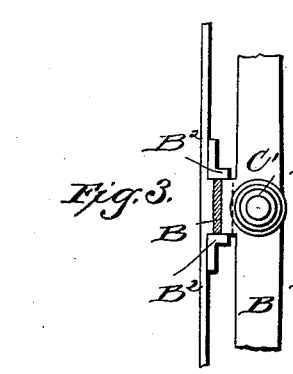


Fig. 1.

Fig. 7.

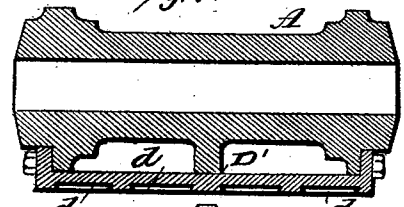
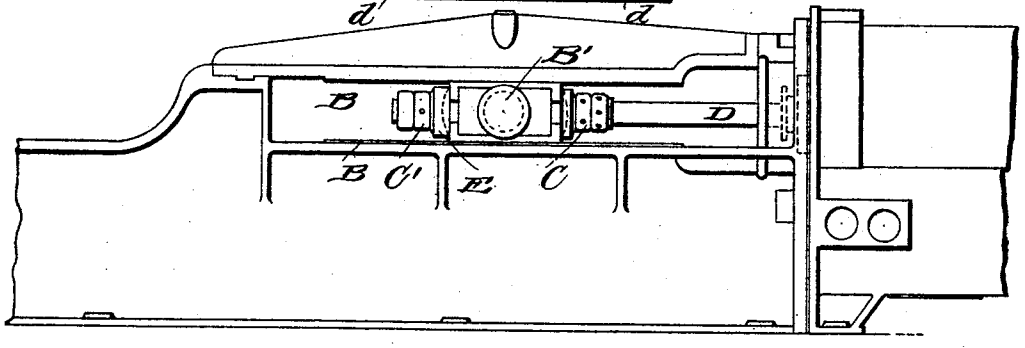


Fig 2



Witnesses

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(No Model.) 2 Sheets—Sheet 2.

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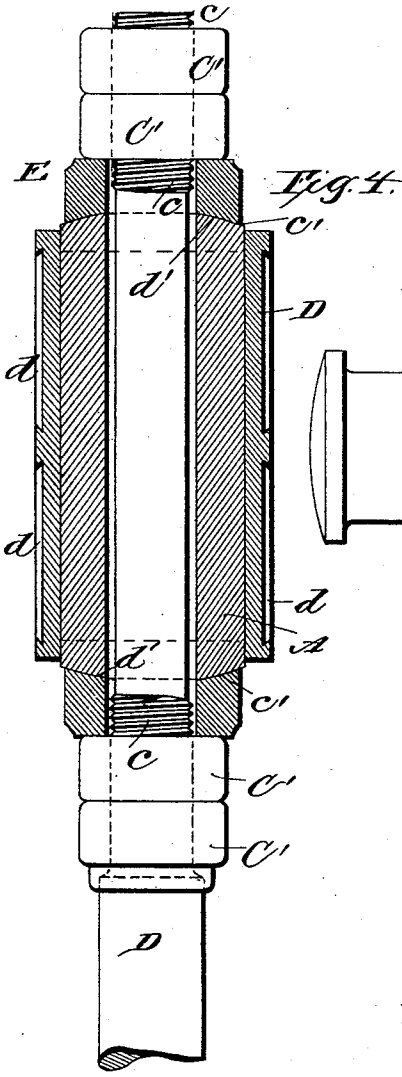

Fig. 4.

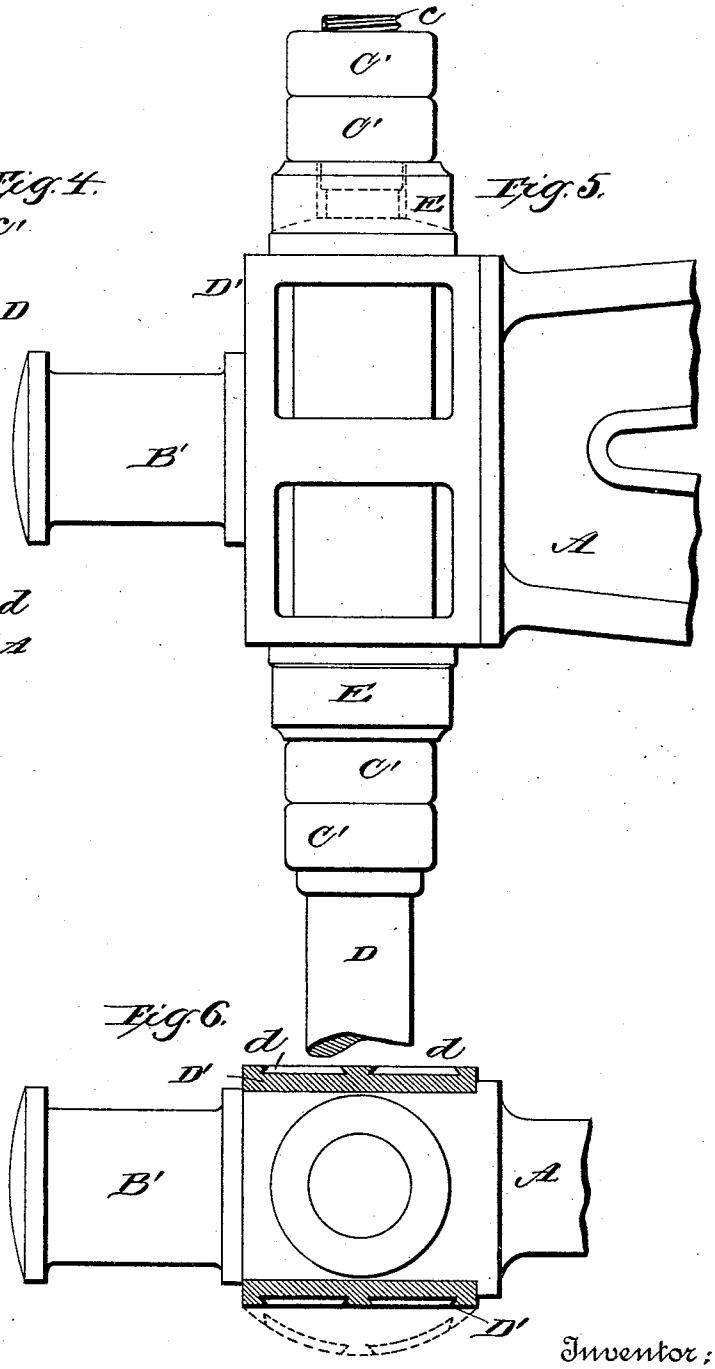

Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

WILLIAM WRIGHT, OF NEWBURG, NEW YORK.

ENGINE CROSS-HEAD.

SPECIFICATION forming part of Letters Patent No. 475,428, dated May 24, 1892.

Application filed July 2, 1891. Serial No. 398,236. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WRIGHT, a citizen of the United States, residing at Newburg, in the county of Orange, State of New York, have invented certain new and useful Improvements in Steam-Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in steam-engines, and more particularly to the cross-head and to the means for connecting the piston-rods therewith; and it has for its object, among others, to provide simple and efficient means for the purpose of allowing a slight variation of any part of the machinery from a true line without affecting the working parts or bringing any undue strain thereon.

Another object is to so connect the outer cylinder piston-rods to the cross-head in line with the line of resistance or adjacent thereto as to bring the line of power and resistance as near as practicable as the style of construction will admit.

I provide ball-and-socket joints of peculiar construction, which gives the necessary movement to accommodate any irregularity that may arise from any of the parts getting out of line. I provide slide-pieces on each side of the lower central gibs for the slide to keep the cross-head central and prevent any movement laterally.

Other objects and advantages of the invention will be set forth in the folllowing description, and the novel features thereof will be particularly pointed out in the claims.

The invention is clearly illustrated in the following drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a top view showing a portion of the slides, a portion of the cross-head and frame, and a portion of the central and one of the side cylinders of a triple compound engine. Fig. 2 is a side view of the same. Fig. 3 is a detail, in edge view, of a portion of the cross-head, showing the side guides therefor. Fig. 4 is a section through the end of the cross-head. Fig. 5 is a top view, on an enlarged scale, of the end of the cross-head, showing its connection with the rod. Fig. 6 is an edge view of Fig. 5. Fig. 7 is a section through the center of the end of the cross-head, showing one of the gibs in place.

Like letters of reference refer to like parts in all the figures of the drawings.

Referring now to the details of the drawings by letter, it is to be understood that the frame-work and all other parts of the invention not constituting a part of the present invention may be of any well-known or approved form of construction, and it has therefore not been deemed necessary to show any more of an engine than the parts comprising the present invention and those closely connected or co-operating therewith. It is also to be understood that while I have chosen to show my present invention as applied to a triple compound engine I do not of course restrict myself to the employment thereof with such form of engine.

A designates a cross-head, which, except in the particulars hereinafter specified, may be of any well-known or approved construction.

B are the slides, and B′ is the journal for attaching the connecting-rod.

B^2 are side guides on the central bottom slide, as seen best in Fig. 3, and which serve as an additional means of keeping the cross-heads central and preventing movement thereof from right to left in its reciprocation, and thus preventing it from getting out of line.

D is the piston-rod, the manner of connection of which with the cross-head will be more clearly understood by references to Figs. 4 and 5, in which D′ are gibs, preferably of brass, for the slides and formed with dovetailed recesses *d*, in which may be placed Babbitt metal, if desired. The holes in the cross-head for the reception of the piston-rods are somewhat larger than said rods, as seen clearly in Fig. 4, the said rods being screw-threaded, as shown at *c*, to receive jam-nuts C′ upon opposite sides of the portion of the cross-head, through which the piston-rod passes, and between the inner jam-nuts and the ends of the portion of the cross-head through which the rods pass are placed the washers E, the bores of which are also larger than the diameter of the piston-rod and preferably the same as that of the portion of the cross-head with which they engage. These washers are formed with spherical cavities *c*′,

as seen more clearly in Fig. 4, which are fitted to the spherical surfaces d', turned on the cross-heads, as seen in said Fig. 4. The object of these spherical surfaces on the cross-head and washers and the enlarged hole for the piston-rod is to allow a vertical or horizontal movement of the connections to adapt themselves to any change or changes that may rise from any part of the engine getting out of line, thus preventing any unusual strain on the moving parts of the engine.

It will be noticed from Figs. 1 and 2 that the piston-rod of the outer cylinder is connected to the cross-head on the line of the center of the slides so as to bring the power as near in line with the resistance as possible, the line of resistance being through the center of the connecting-rod.

Modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

What I claim is—

1. In a steam-engine, a ball-and-socket connection between the piston-rod and cross-head, the rod passing through said connection, as set forth.

2. In a steam-engine, the cross-head and piston-rod connected by ball-and-socket connection, the rod passing through the said connection, combined with adjusting means, as set forth.

3. In a steam-engine, the combination, with the piston-rod and the cross-head having an opening to receive said piston-rod of greater diameter than the said rod, of jam-nuts on the rod and interposed washers, as and for the purpose specified.

4. In a steam-engine, the combination, with the piston-rod and the cross-head having bore of greater diameter than said rod with outer spherical surfaces, of the washers having engaging spherical surfaces and means for retaining the washers in position, as set forth.

5. In a steam-engine, the combination, with the piston-rod and cross-head having bore of greater diameter than said rod with outer spherical surfaces, of the washers having engaging spherical surfaces, and jam-nuts on the rod and engaging said washers, as and for the purpose specified.

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

WILLIAM WRIGHT.

Witnesses:

ALBERT N. CHAMBERS,

F. B. HOWELL.