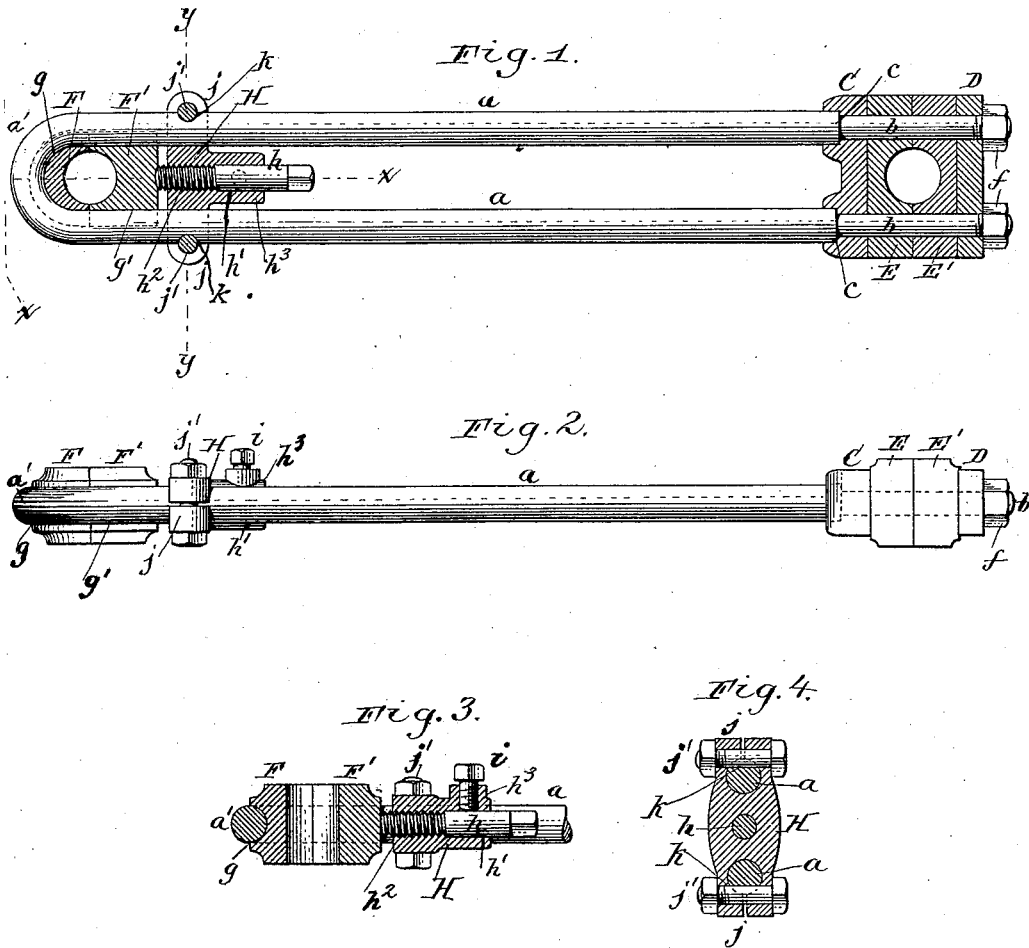


(No Model.)

R. W. AITKEN.  
CONNECTING ROD.

No. 425,119.

Patented Apr. 8, 1890.



Chas. J. Buchheit.  
Emil Neuhart } witnesses.

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# UNITED STATES PATENT OFFICE.

ROBERT W. AITKEN, OF BUFFALO, NEW YORK, ASSIGNOR OF ONE-HALF  
TO ROBERT LAWS, OF SAME PLACE.

## CONNECTING-ROD.

SPECIFICATION forming part of Letters Patent No. 425,119, dated April 8, 1890.

Application filed July 23, 1889. Serial No. 318,357. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT W. AITKEN, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Connecting-Rods, of which the following is a specification.

This invention relates to that class of connecting-rods in which the body of the rod is formed of a strap, bar, or rod bent or doubled back upon itself; and the object of my invention is to produce a light and durable connecting-rod of this kind, which dispenses with the usual cross-bolts, gibs, and keys for adjusting the bearings, and which is simple in construction and can be manufactured at comparatively small expense.

In the accompanying drawings, Figure 1 is a longitudinal sectional elevation of my improved connecting-rod. Fig. 2 is a top plan view thereof. Fig. 3 is a horizontal section in line  $x x$ , Fig. 1. Fig. 4 is a vertical transverse section in line  $y y$ , Fig. 1.

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

The frame or body of the connecting-rod is constructed of a single piece of wrought iron or steel, preferably rolled bar-iron, which is bent to form two parallel bars or rods  $a a$  and a connecting bend or bow  $a'$ . The free ends of the rods  $a$  are preferably reduced in diameter and screw-threaded and form shanks  $b$ , to which are secured the bearings or brasses for the crank-pin.

C represents a cross-bar or plate connecting the ends of the rods  $a$ , and provided with openings, through which the shanks  $b$  are inserted, and whereby the rods are held parallel with each other and prevented from spreading. The cross-bar C bears against shoulders  $c$ , formed at the junction of the shanks  $b$  with rods  $a$ . The shoulders are seated in sockets formed in the cross-bar C.

D represents a similar cross bar or plate connecting the outer ends of the shanks  $b$ , and provided with openings arranged in line with the openings in the cross-bar C to receive the ends of the shanks.

E E' represents the half-bearings or brasses applied to the shanks of the rods  $a a$  be-

tween the cross bars or plates C and D, and which embrace the crank-pin or other part to which the rod is connected. The bearings E E' are provided with openings, through which the shanks  $b b$  pass. The bearings E E' rest, respectively, with their outer flat faces against the flat faces of the cross-plates C and D. The outer bearing E' is moved toward the inner bearing E by screw-nuts  $f f$ , arranged on the outer threaded ends of the shanks  $b$  and bearing against the outer face of the cross-bar D, thereby tightening the bearings upon the journal or crank-pin, which they embrace.

F F' represent the half-bearings arranged at the opposite end of the connecting-rod, between the rods  $a$  and bow  $a'$ . The outer bearing F has its outer convex surface provided with a semicircular groove or recess  $g$ , in which the inner surface of the bow  $a'$  is seated. The inner bearing F' is provided on its upper and lower edges with semicircular recesses or grooves  $g'$  to receive the inner sides of the rods  $a a$ . The recesses or grooves  $g g'$  retain the bearings between the rods  $a a$  and prevent their lateral displacement.

H represents a cross-bar arranged between the rods  $a a$ , near the inner bearing F', and provided with a longitudinal adjusting-screw  $h$ , which bears against the inner bearing F', and whereby the latter is tightened against or moved toward the outer bearing F. The adjusting-screw  $h$  is arranged in a socket  $h'$ , formed in the cross-bar H and having a threaded inner portion  $h^2$ , which engages with the threaded portion of the adjusting-screw.

$i$  represents a set-screw arranged transversely in the outer portion  $h^3$  of the socket and engaging against the smooth outer surface of the adjusting-screw, whereby the latter is held against turning in the socket.

The cross-bar H is secured to the rods  $a a$  by split sockets  $j$ , which embrace the rods  $a$ , and which are provided with bolts  $j'$ , connecting the two jaws of each socket. The bolts  $j'$  pass through openings formed in the jaws of the split sockets  $j$ , and are seated in a semicircular groove  $k$ , formed in the outer side of each rod  $a$ . Upon tightening the bolts  $j'$  the cross-bar H is firmly clamped upon the rods

*a*, and is held from longitudinal movement on the rods by the bolts *j'* projecting into the grooves *k*. The cross-bar *H* also prevents any spreading of the rods *a*, and assists in holding the latter rigidly in place. Each of the bearings at the opposite ends of the connecting-rod can be readily adjusted for wear independently of the other bearing.

My improved connecting-rod can be produced at comparatively small expense, as the parts require no special fitting, and the usual end straps and cross-bolts and gibs and keys which require to be fitted with great care are dispensed with. I also avoid the shearing strains to which these parts are subjected, as the tensile and compressing strains are brought to bear directly upon the rods *a a*.

I claim as my invention--

1. A connecting-rod composed of a single bar or rod bent to form two parallel rods and a connecting-bow and provided with separate and independently-adjustable end bearings, substantially as set forth.

2. In a connecting-rod, the combination, with the rods *a a* and connecting-bow *a'*, bent of a single bar or rod, the rods being provided with longitudinal screw-shanks at their ends, of bearings adjustably mounted on said screw-shanks, bearings seated in the connecting-bow and the adjacent portions of the rods, and a longitudinal adjusting-screw, whereby said last-named bearings are adjusted, substantially as set forth.

3. In a connecting-rod, the combination, with the rods *a a* and connecting-bow *a'*, bent from a single bar or rod, of the shanks *b*, formed on the ends of said rods and provided with screw-threads, cross-bars *C D*, applied to said shanks, bearings *E E'*, applied to said shanks between the cross-bars *C D*, and screw-nuts *f f*, applied to said shanks and bearing

against one of said cross-bars, substantially as set forth.

4. In a connecting-rod, the combination, with the rods *a a* and connecting-bow *a'*, bent from a single bar or rod, of bearings *F F'*, arranged between said rods and seated against said bow, a cross-bar *H*, secured to said rods on the inner sides of said bearings, and an adjusting-screw arranged in said cross-bar and engaging against said bearings, substantially as set forth.

5. In a connecting-rod, the combination, with the rods *a a* and connecting-bow *a'*, formed from a single bar or rod, of the bearings *F F'*, arranged between the rods *a a* and seated against said bow, a cross-bar *H*, provided with split sockets *j*, embracing the rods *a a*, clamping-bolts *j'*, connecting the jaws of the split sockets and seated in recesses formed in the rods *a a*, and an adjusting-screw *h*, engaging against the bearings *F F'*, substantially as set forth.

6. The combination, in a connecting-rod, with the rods *a a*, connecting-bow *a'*, formed integral with the rods, and shanks *b b*, provided with screw-threads, of the bearings *F F'*, arranged between said rods and seated against the bow *a'*, a cross-bar secured to said rods and provided with a screw-threaded socket *h*, an adjusting-screw arranged in said socket and engaging against said bearings, cross-bars *C D*, secured to the shanks *b b*, bearings arranged between said cross-bars, and screw-nuts *f*, secured to the threaded ends of said shanks, substantially as set forth.

Witness my hand this 27th day of June, 1889.

ROBERT W. AITKEN.

Witnesses:

F. C. GEYER,

ALICE G. CONNELLY.