

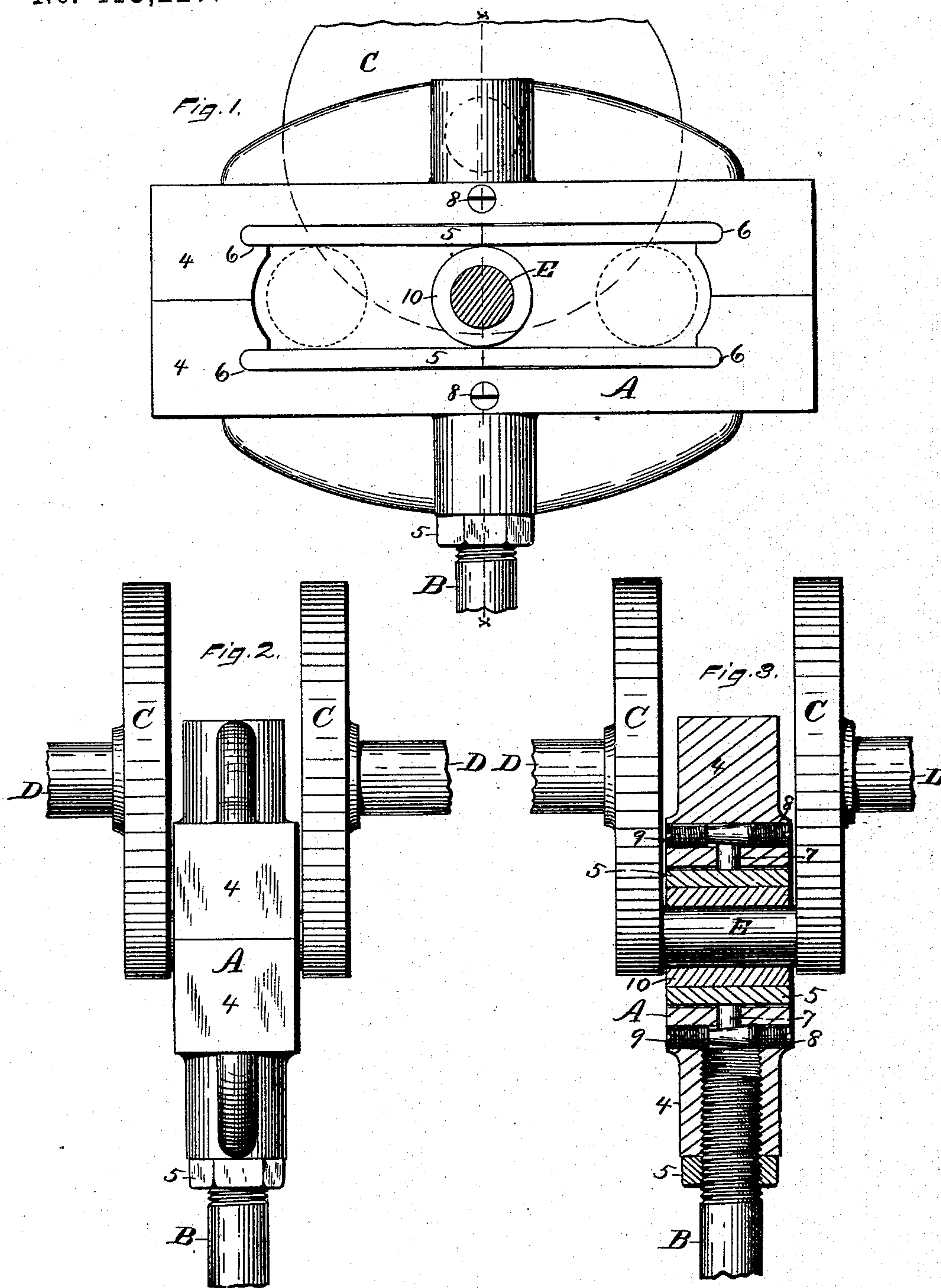
(No Model.)

A. H. EDDY.

CROSS HEAD.

No. 413,227.

Patented Oct. 22, 1889.



Witnesses.

John Edwards Jr.
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UNITED STATES PATENT OFFICE.

ARTHUR H. EDDY, OF HARTFORD, CONNECTICUT.

CROSS-HEAD.

SPECIFICATION forming part of Letters Patent No. 413,227, dated October 22, 1889.

Application filed April 8, 1889. Serial No. 306,309. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR H. EDDY, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Cross-Heads for Steam-Engines, of which the following is a specification.

My invention relates to improvements in cross-heads for steam-engines or other machines where a reciprocating motion is converted into a rotary motion, or vice versa; and the objects of my improvement are to improve the efficiency of the cross-head, and especially to prevent a jar or shock at the ends of the piston's stroke.

In the accompanying drawings, Figure 1 is a side elevation of my cross-head, with the crank-pin shown in transverse section. Fig. 2 is a front elevation of the same; and Fig. 3 is a sectional view, partly in elevation, on the line $x x$ of Fig. 1.

A designates the cross-head connected with the piston-rod B, and C C designate the crank-disks of the shaft D. The shaft and crank-pin E may be of any ordinary construction.

The cross-head A is preferably composed of two companion parts 4 4, properly secured together, into one of which the piston-rod B is secured by screwing it into a threaded hole therein and locked in place by a set-nut. In each of the parts 4 4, I arrange two friction-plates 5 5, preferably of hardened steel, the ends of which plates enter recesses 6 6, Fig. 1, formed in the parts 4 4 of the cross-head, the space between said plates forming a slot for the crank-pin to work in. At the middle of each plate there is a hole extending at right angles to said plate, within which I insert blocks or pins 7 7, with one of their ends bearing upon said plates. In other holes through the parts 4 4, I arrange adjusting-screws 8 8, provided with a conical tapering end, with the tapering sides thereof bearing upon the blocks or pins 7 7, whereby an adjustment of said screws, acting through said blocks or pins, will spring the middle portion of the plates 5 5 slightly toward each other, as shown in Fig. 1.

In order to hold the screws 8 8 against accidental displacement, I provide the lock-screws 9 9 for bearing against the ends of said adjusting-screws, as shown in Fig. 3. I prefer to provide the crank-pin E with a friction-roller 10, which also may be of hardened steel for contact with the plates 5 5. These plates should be so adjusted that the roller or crank-pin, in case no roller is employed, will snugly fill the space between said plates at the middle portion, as shown in Fig. 1, the middle being the point where the crank-pin will be when the cross-head and piston-rod reach either end of their stroke. Upon each side of this point the space between the plates may be slightly greater than the diameter of the roller, so as to avoid friction; but this looseness on each side of the middle will not cause any jar or shock, because when the cross-head is moving in one direction the roller will bear constantly upon one of said plates, gradually working from and toward the middle or changing point, and then bear continually upon the opposite plate until it reaches the changing-point at the opposite end of the piston's stroke.

In Fig. 1 the broken circle at the right indicates the position of the roller 10 at the farthest point from the middle of the plate when it is driving the cross-head downwardly, said roller bearing upon the lower plate. The broken circle at the left-hand side of said figure indicates said roller as bearing upon the upper plate and driving the cross-head in the opposite direction.

By my improvement I make an easy-working cross-head which will give no jar or shock at the end of the piston's stroke, and I make provision for adjustment to make an accurate fit and to compensate for wear.

I claim as my invention—

1. The herein-described slotted cross-head provided with friction-plates for the crank-pin or crank-pin roller, with the middle point between the plates closely fitted thereto, and with a slightly-increasing space upon each side of said middle point, substantially as described, and for the purpose specified.

2. The combination of a slotted cross-head, two friction-plates secured therein, screw-adjusting devices for springing the middle portion of said plates toward each other, and the crank-pin or crank-pin roller working between said plates, substantially as described, and for the purpose specified.

ARTHUR H. EDDY.

Witnesses:

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