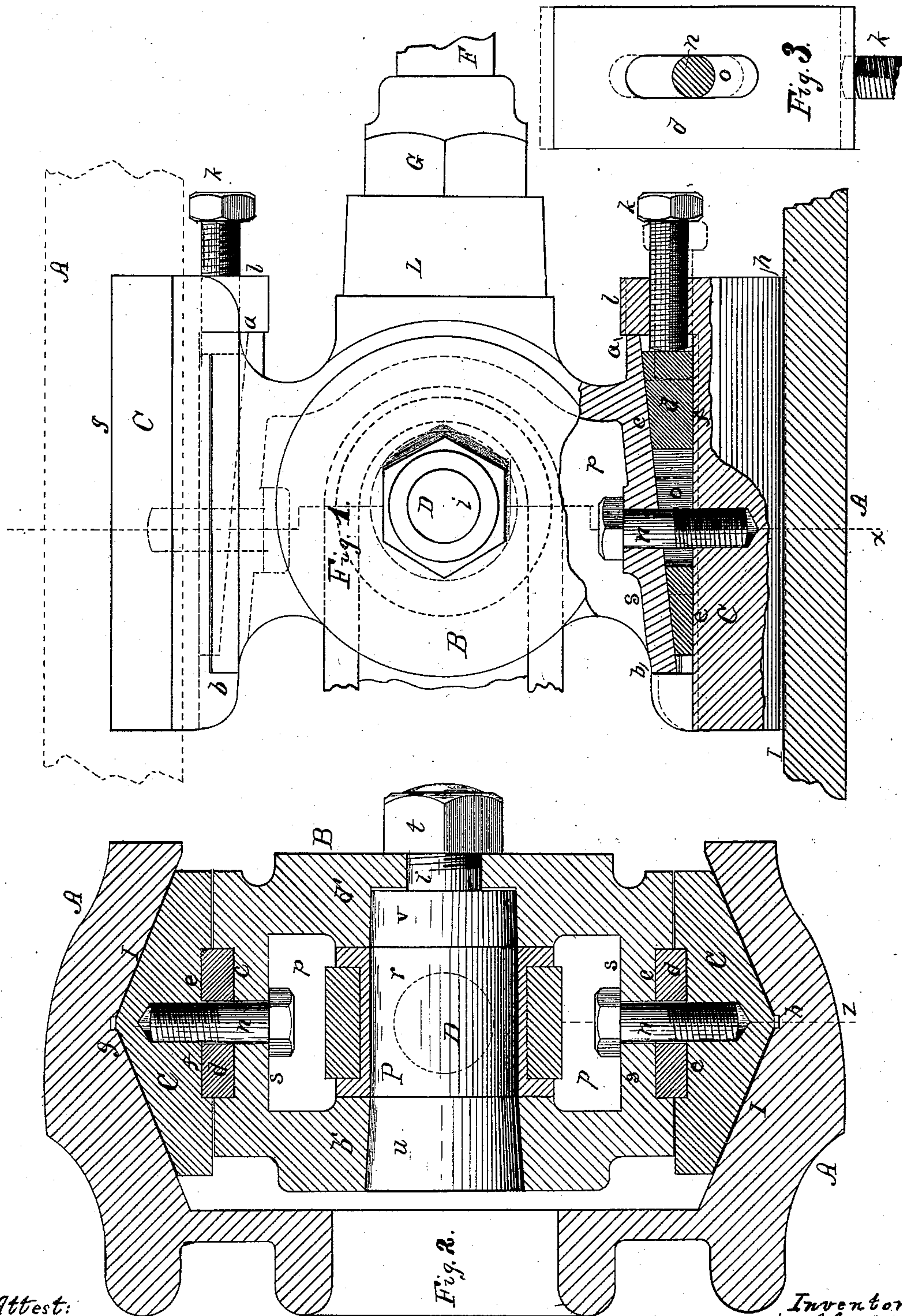


(No Model.)

W. J. CREELMAN.
ENGINE CROSS HEAD.

No. 324,367.

Patented Aug. 18, 1885.



Attest:
M. E. Furlong.
Geo. W. Tuttle.

Inventor:
Wm. J. Creelman,
by C. E. Whitmore,
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM J. CREELMAN, OF ROCHESTER, NEW YORK, ASSIGNOR TO THE
WOODBURY ENGINE COMPANY, OF SAME PLACE.

ENGINE CROSS-HEAD.

SPECIFICATION forming part of Letters Patent No. 324,367, dated August 18, 1885.

Application filed April 2, 1885. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. CREELMAN, of Rochester, in the county of Monroe and State of New York, have invented a new and
5 useful Improvement in Engine Cross-Heads, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

The object of my invention is to furnish a
10 better method of compensating for the wear of the sliding surfaces of an engine cross-head; and it consists in parts and devices formed and combined, substantially as hereinbelow set forth and more particularly pointed out
15 in the claims.

Referring to the drawings, Figure 1 is a plan of the cross-head with parts of the same longitudinally sectioned, as on the dotted line *z* in Fig. 2, parts being shown in positions of
20 adjustment in dotted lines; Fig. 2, a transverse section of the same, taken on the dotted line *x* in Fig. 1, showing further the relative arrangement of the parts, and Fig. 3 a plan of one of the wedges or keys with a portion of
25 the adjusting-screw and the clamp-screw transversely sectioned, the wedge being shown in dotted lines as in another position of adjustment.

Referring to the parts, A is the frame of the
30 engine formed with sliding surfaces or slides I for the cross-head to travel in; B, the body of the cross-head; C, the gibs; D, the wrist-pin; F, the piston-rod, and G the set-nut threaded onto the piston-rod and brought to
35 bear against the hub L of the cross-head. The gibs are each separate from the body of the cross-head and fitted to move laterally thereon upon the parallel opposing faces or bearing *a* and *b*. The slides are made trough-
40 shape in cross-section, the planes of the bearing-faces of each forming together an obtuse angle, the opposing bearing-faces of the gibs being made V-shaped to correspond.

A tapering longitudinal groove, *c*, rectangular in cross-section, is formed in each of the
45 opposite edges of the body of the cross-head, and corresponding grooves, *f*, of equal width are formed in the opposing inner faces, *e*, of the gibs, the latter grooves being parallel with
50 each other and with the slides. These opposing grooves register and form together lon-

gitudinal tapering seats or races each side of the cross-head in which to receive wedges or tapering keys *d* for purposes specified further on. The keys are shorter than the seats or
55 races in which they rest, which admits of longitudinal adjustments of said keys within the same. It is plain that if either key be moved in the direction of its taper it will force the contiguous gib in a direction farther away from
60 the body of the cross-head, or, if moved in the opposite direction, the gib may be brought nearer the cross-head—that is to say, by means of the tapering keys the extreme width of the cross-head, measuring from the ridge *g* of one
65 gib to the ridge *h* of the other, may be increased or diminished within limits at pleasure. By this means the wear of the slides and gibs may be easily compensated for, and in addition thereto means is furnished to assist
70 in aligning in one way the cross-head and piston-rod.

The keys *d* are moved in the direction of their taper by means of adjusting-screws *k* threaded in webs *l* at the ends of the gibs in
75 position to have their respective points bear against the bases of the keys.

Openings *p* are left in the body of the cross-head in the outer walls, *s*, of which the key-seats or races *c* above described are formed. 80 Clamping-screws *n* are passed laterally through the walls *s* in positions to pierce the respective axis of the keys, longitudinal slots *o* being formed in the keys through which said screws pass, which latter are threaded in the respect-
85 ive gibs. The clamp-screws pass freely through the slots of the keys, which slots admit of the endwise adjustments of the keys above specified.

From this construction of parts it will be
90 understood that when either key is brought to any position of adjustment in its seat, and the clamping-screw passing through it tightened, the gib will be held rigidly to the body of the cross-head, and both gib and cross-head
95 will be as if they were one solid piece. This I regard as of great importance, for by this construction I have all the advantages of a solid cross-head, combined with convenient means of adjustments to contract the constant
100 wear of the gibs and slides.

The wrist-pin D, I prefer to make of a cylin-

drical part, r , between two conical parts, u and v , as shown, with a threaded stem, i , and binding-nut t to hold the pin in place in the cross-head. As shown, the conical parts of the pin are not alike in average diameter, the diameter of the minor base of the larger part u and the diameter of the major base of the lesser part v being equal, and each equal to the diameter of the cylindrical part r of the pin. The wrist-pin spans the opening P in the head occupied by the boxes and strap of the connecting-rod with the conical parts finely fitted in corresponding cavities or bearings in the respective walls or plates d' and b' on either side of said opening P . The binding-nut t serves to draw and hold the pin firmly in its bearings in the plates b' and d' . In this form of wrist-pin I have the combined advantages of a parallel or cylindrical bearing for the connecting-rod and taper fit for the wrist-pin in the cross-head.

A wrist-pin made cylindrical throughout is apt to become loose in its bearings in the cross-head, and no means is provided to render it tight, while if tapering throughout the strain on the rod causes the latter, on account of the taper bearing on the pin, to crowd the wall of the cross-head pierced by the smaller end of the pin. Both objections are overcome by using the form of cylindrical double-taper wrist-pin herewith shown.

What I claim as my invention is—

1. The combination, with the body of an engine cross-head, of the adjustable gibs C , wedge-shaped in cross-section, bearing upon slides having V -shaped grooves, the adjustable wedges or keys d , between the body of the cross-head and the said gibs, and the clamping-screws n , substantially as and for the purpose set forth.

2. The combination, with the body of an engine cross-head and the adjustable gibs C working in grooved slides, of the wedges or keys d , between the body of the cross-head and the said gibs, the adjusting-screws k , by means of which the said wedges or keys are moved in the direction of their taper, and the clamping-screws n , substantially as set forth.

3. The body of an engine cross-head having grooves formed in its opposite sides, and the gibs C , having grooves formed in their sides, in combination with slotted tapering keys or wedges d , fitting in said grooves and moved in the direction of their taper by means of adjusting-screws k , and the clamping-screws n , which are passed through the respective walls of the cross-head and the slots in the keys and threaded in the gibs, substantially as set forth.

WM. J. CREELMAN.

Witnesses:

E. B. WHITMORE,
M. E. FURLONG.