

W. J. WASSMANN.
CROSS HEAD.
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957,920.

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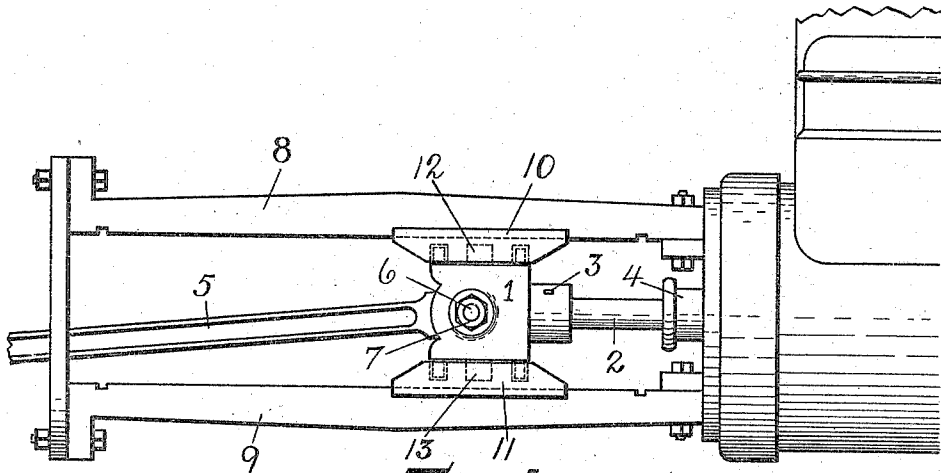


Fig. 1 -

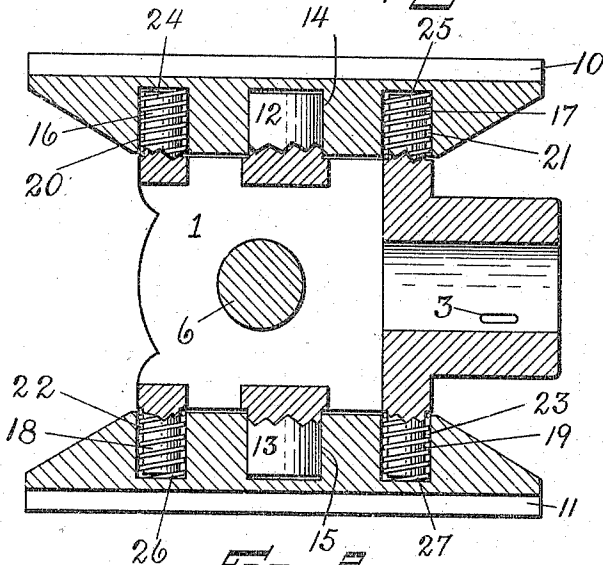


Fig. 2 -

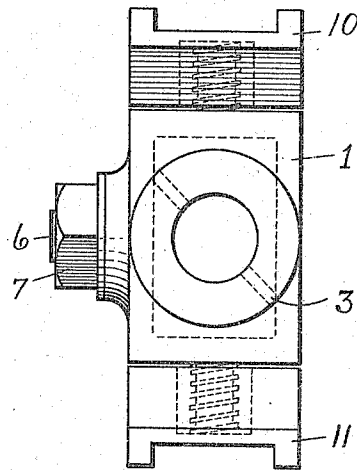


Fig. 3 -

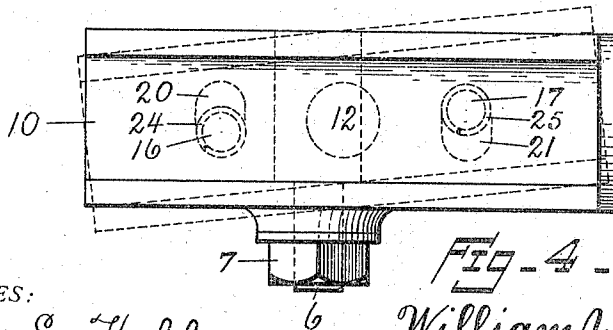


Fig. 4 -

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CROSS-HEAD.

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To all whom it may concern:

Be it known that I, WILLIAM J. WASSMANN, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Improvement in Cross-Heads, of which the following is a specification.

This invention relates to cross-heads for engines, pumps, and the like, and the objects of my improvement are, flexibility of the cross-head in relation to the guides, to prevent binding of the gibs on the guides and the piston-rod in the stuffing-box, to prevent wear of the guides and the gibs, to prevent wear of the piston-rod and the piston-rod packing, to prevent wear of the piston-head and the cylinder, to prevent excessive friction and consequent loss of power, and to facilitate alining.

In locomotive practice, especially, I have observed that the guides and gibs are frequently excessively worn, showing that they have been binding inordinately relative to each other, which caused cutting. I have also observed that the cylinders have been excessively worn and cut on the sides, more than at the top and bottom, showing that there has been a lack of proper alinement of the piston-rod in relation to the cylinder. In seeking for the cause of these difficulties, I discovered that sometimes the guides were not placed in exact alinement when the engine was erected or repaired. This is somewhat excusable since the process of alining the guides requires extreme accuracy and skill. Another cause I have found to be the twisting and springing of the engine frame while running over rough roads. Under these circumstances the lack of alinement is unavoidable and on account of the rigid construction in present practice the difficulties mentioned are also unavoidable. But I have overcome these difficulties in a simple and effective way, by means of the structure illustrated in the accompanying drawings, in which—

Figure 1 is an elevation; Fig. 2, a vertical sectional view; Fig. 3, an end view of the cross-head and gibs looking from the cylinder; and, Fig. 4 is a top plan view of the cross-head and gibs.

Similar reference numbers refer to similar parts throughout the several views of the drawings.

A main cross-head member, 1, is secured to a piston-rod, 2, by means of a key, 3, in

the usual manner. The piston-rod works in the stuffing-box, 4. The piston attached to the inner end of the piston-rod 2 may be of any ordinary type and is not illustrated in detail. The usual connecting-rod, 5, is secured in cross-head member 1 by means of a pin, 6, provided with a nut, 7, or in any other suitable way. The usual guides, 8 and 9, may be provided, for guiding the cross-head. Gibs, 10 and 11 are mounted upon cross-head member 1 and adapted to slide on the guides 8 and 9 in the usual way, but instead of fastening the gibs 10 and 11 rigidly upon cross-head member 1, they are pivotally mounted upon the cross-head member, so that they may swing with limited amplitude in a horizontal plane with relation to the cross-head member 1.

I prefer to accomplish the pivotal mounting of the gibs on the cross-head member by means of a central trunnion, 12, at the top and a similar trunnion, 13, at the bottom. The gibs 10 and 11 are provided with corresponding bearing-receptacles, 14 and 15, located at their centers. The trunnions 12 and 13 are preferably of relatively large diameter, so as to provide strength and large wearing surface.

Toward each end of the gibs 10 and 11 and at the ends of the cross-head member 1 are provided studs, 16, 17, 18 and 19, to limit the amplitude of motion of the gibs relative to the cross-head member and also to provide additional bearing. Receptacles, 20, 21, 22, and 23 are provided in the gibs for the studs 16, 17, 18 and 19, and are formed somewhat oblong to permit rocking motion of the gibs relative to the cross-head member. I prefer to surround the studs 16, 17, 18 and 19 with coil springs, 24, 25, 26 and 27, which are adapted to push the gibs outward from cross-head member 1 firmly against the guides and prevent the "slopping" incident to lost motion due to wear of the gibs and the guides.

It will be understood that by the construction just described the cross-head is flexibly mounted, relative to the guides, and any slight lack of parallelism or other alinement of the guides, whether permanent or temporary, will be automatically provided for and binding of the bearing surfaces of the gibs, guides, piston-rod, stuffing-box, piston and cylinder will be prevented. The construction is obviously simple, inexpensive and durable. These qualities are especially

useful in railroad locomotive practice. It will be understood that the invention will also prove useful in stationary engine and pump practice, where it is often difficult to
5 preserve exact alinement on account of the settling of foundations and the development of lost motion in parts of the frame.

Having thus described my invention, so that any one skilled in the art pertaining thereto may make it and understand its use,
10 I claim—

1. In a cross-head, the combination of a main cross-head member, a gib, a guide, a trunnion on said cross-head member, said
15 gib being formed with a corresponding receptacle for said trunnion, and a guiding-stud on said cross-head member, and said gib being formed with a receptacle for said guiding-stud.

20 2. In a cross-head, the combination of a

main cross-head member, a gib, a slide, a trunnion mounted on said cross-head member, said gib being formed with a bearing-receptacle for said trunnion, a stud mounted on said cross-head member, said gib being
25 formed with a receptacle for said stud, and a spring mounted over said stud.

3. In a cross-head, the combination of a main cross-head member, a gib, a slide, a trunnion mounted on said cross-head mem-
30 ber, said gib being formed with a bearing-receptacle for said trunnion, a stud mounted on said cross-head member, said gib being formed with a laterally elongated receptacle for said stud, and a spring mounted over
35 said stud.

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Witnesses:

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