J. F. EISCHEID.

ADJUSTABLE CROSSHEAD.

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1,371,745.

Patented Mar. 15, 1921.

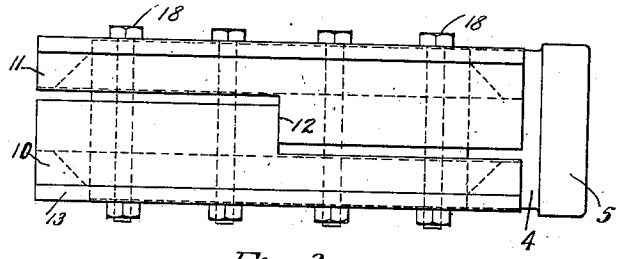


Fig. 3

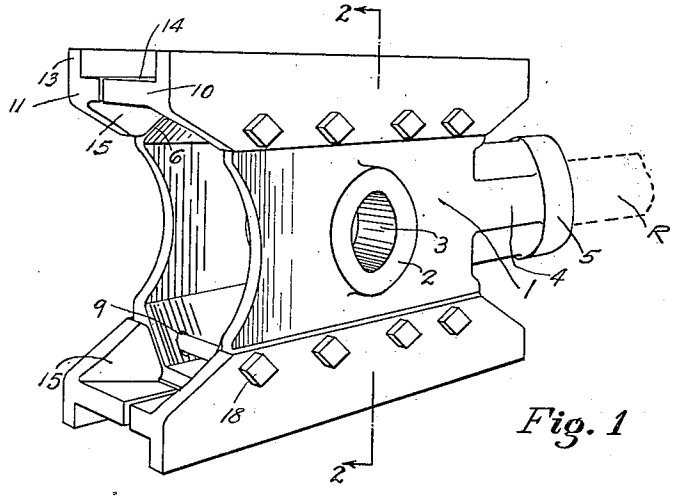


Fig. 1

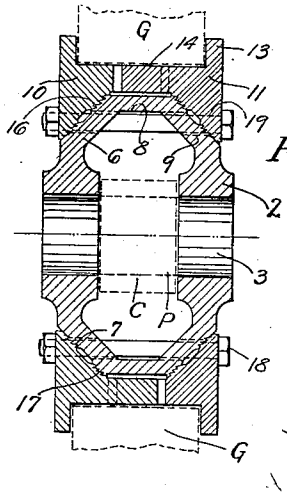


Fig. 2

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To all whom it may concern:

Be it known that I, JOSEPH F. EISCHEID, a citizen of the United States, residing at Oelwein, in the county of Fayette, State of Iowa, have invented certain new and useful Improvements in Adjustable Crossheads; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to machine elements, and more especially to guides; and the object of the same is to produce an improved crosshead whose wear faces or shoes may be adjusted on its pivot block from time to time to take up looseness.

The invention consists in making up each shoe of a pair of like coacting members mounted on inclined walls of the block and capable of being drawn toward each other to reduce the distance between their flanges and simultaneously moved outward on said walls as hereinafter explained.

The invention also consists in providing the contacting faces of the members of the shoe and the walls with stepped notches to hold the shoes positively after they have been adjusted.

Details are set forth below and shown in the drawings wherein:

Figure 1 is a complete perspective view.

Fig. 2 is a cross section on the line 2—2 of Fig. 1.

Fig. 3 is a plan view.

In the present case we may assume that the crosshead is to be reciprocated between parallel guides G by movements of an element R such as a piston rod, and the reciprocations of the latter are in turn to be communicated to another element C such as a connecting rod or pitman which is pivoted at P within the crosshead. It is obvious that, no matter how well the parts are built and fitted and kept lubricated, wear will occur in time. It is the purpose of the present invention to provide a crosshead which shall have wear faces or shoes traveling next the guides and taking this wear, the shoes being adjustably carried on a body of appropriate type and to which the elements R and C are connected.

Coming now to the details of the present invention, the pivot block 1 may well be shaped as best seen in Fig. 1. Here it is formed hollow, with bosses 2 in its opposite sides pierced with alined holes 3 for the passage of the pivot pin P, and at one end it has an extension 4 and a coupling 5 within which the element R may be secured in any suitable manner. It is essential that at top and bottom its walls 6 converge, preferably in planes standing about 45° to the vertical, and these walls are provided on their outer faces with longitudinal stepped notches 7, while their upper edges are connected by a flat top wall 8. Transversely through the block are formed bolt holes 9, preferably about four in number and also preferably slightly oval with their longer axes upright, and it may be well to have the notches 7 in two banks or groups, one above and one below the series of holes as seen in Fig. 2.

Coacting with said block are upper and lower shoes, which being duplicates I will describe but one. Each shoe is made up of two like parts or members 10 and 11, each cut away on its inner face to produce a shoulder 12 so that when the members are turned face to face the shoulders contact as seen in Fig. 3, and the ends of the members are substantially flush. Each member, as seen in Figs. 1 and 2, has a substantially triangular body with an upstanding flange 13 to travel against the side of the guide, the top 14 of the body underlying the guide, and the inclined face 16 overlying the inclined wall 6 of the block 1 and provided with stepped notches 17, preferably arranged in two groups or banks, the body also having transverse bolt holes between these groups as indicated at 19. As will be seen in Fig. 1, the shoes are somewhat longer than the block, and provided with abutments or lugs 15 which, when the two members of any shoe are applied to one edge of the block, extend across the ends of the latter so as to absolutely prevent longitudinal movement of the members on the block and shearing of the bolts 18.

In the assembly of the parts of a crosshead as thus constructed, the element or rod R is screwed into the coupling 5 of the block and the element or connecting rod C is pivoted at P thereto. With said block standing between the guides G and G, a pair of shoe

members 10 and 11 are now applied to the upper converging walls with their shouldered inner faces lapping at 12, and bolts 18 are passed through the alined holes 9 and 19. Then another pair of shoe members are similarly applied to the lower side of the block and bolted thereto. Before setting up the nuts on the bolts, however, the parts or members of each shoe are moved up the stepped notches 7 so that their upper faces 14 closely underlie the guide G and the inner faces of their flanges 13 closely contact with its sides; and having adjusted one shoe to the upper guide, the other shoe is adjusted to the lower guide, care being taken that the center of the rod R is exactly midway between the guides and in true alinement with the axis of the cylinder from whose piston it leads. When after long use the faces of the shoes sliding against the guides become worn, the nuts on the bolts 18 are loosened, the members of each guide advanced one or two steps out the walls 6 of the block as the elongation of the holes 9 permits, and the nuts tightened up; and here again care must be taken to adjust the upper and lower shoes to take up wear where it is found but to guide the crosshead along a line strictly parallel with the axial movement of the rod R. While it is possible that the stepped notches might be omitted, or the walls 6 might converge on some other angle than that suggested, I prefer the notches because they prevent slipping of the contacting faces, and I prefer 45° so that the notches may be of the shape shown and the members of each shoe interchangeable with each other or with the members of the other shoe, thereby rendering it possible for all said members to be made by the same die or machine.

What is claimed is:

1. In a crosshead, the combination with a block whose walls at top and bottom converge and are provided with stepped notches in two groups, the block having transverse holes between said groups; of shoes at top and bottom, each made up of coacting members whose inner faces are inclined and provided with two groups of stepped notches and with holes between the groups, and bolts passing through alined holes.

2. In a crosshead, the combination with a block whose walls at top and bottom converge and are provided with notches in two groups, the block having transverse oval holes between said groups and the longer axes of such holes being upright; of shoes at top and bottom, each made up of coacting members whose inner faces are inclined and provided with two groups of notches and with holes between the groups, and bolts passing through alined holes.

3. A crosshead adapted for movement between spaced parallel guides, the same comprising a block whose walls converge at top and bottom and are provided with notches, shoes at top and bottom of the block, each made up of a pair of members having lapping shoulders on their contiguous faces, inclined notched faces coacting with said notched walls, and flat wear faces with spaced flanges to fit a guide, and means for adjusting each pair of members on the body.

4. In a crosshead, the combination with a hollow block having bosses in its sides pierced with alined holes for the pivotal connection of one element and an extension at one end with a coupling for the reception of another element, the walls of said block converging toward its top and bottom and being roughened on their exterior; of a pair of substantially triangular shoe members at the top of the block with their inclined faces roughened to mate with the roughened faces of said walls, bolts through the block and members for holding them in adjusted positions thereon, and similar members and bolts at the lower side of the block.

5. The herein described crosshead comprising a block having means for attaching to it the elements which it is to connect, the walls of said block converging at top and bottom and being pierced with transverse holes, shoes at top and bottom of said block, each made up of two coacting members having their inner walls converging to mate with the walls of said block and their wear faces shaped to adapt them to the guide along which they travel, said members being pierced with transverse holes, and bolts through such members and the interposed block and holding the former in adjusted position on the latter.

6. In a crosshead, the combination with a block having means for attaching it to the elements which it is to connect, its walls converging at top and bottom and being pierced with transverse holes; of shoes at top and bottom of said block, each made up of two coacting members having their inner walls converging to mate with the walls of the block and their wear faces shaped to adapt them to the guide along which they are to travel, lugs at the ends of said inclined faces adapted to pass the ends of the block, and means for clamping the members laterally against the converging walls of the block in adjusted positions.

7. In a crosshead, the combination with a block having means for attaching it to the elements which it is to connect, its walls converging at top and bottom and being pierced with transverse holes; of shoes at top and bottom of said block, each made up of two coacting members having their inner walls converging to mate with the walls of the block and their wear faces shaped to adapt them to the guide along which they

are to travel, lugs at the ends of said inclined faces adapted to pass the ends of the block, said members having transverse holes through their inclined faces, and bolts through the holes in the members and in the interposed block for holding the former in adjusted position on the latter.

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

JOSEPH F. EISCHEID.

Witnesses:
JOHN P. MALLEY,
KENNETH RUSHTON.