June 29, 1954 A. R. MAIER 2,682,433

CROSSHEAD ASSEMBLY

Filed Feb. 2, 1949

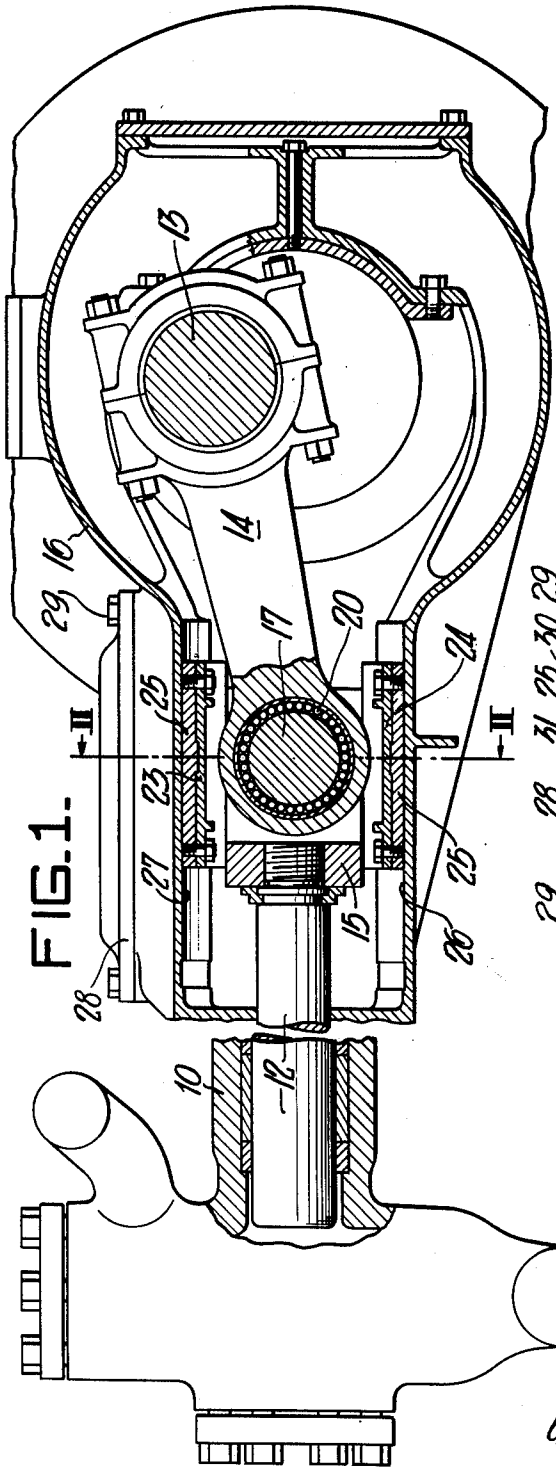


FIG. 1.

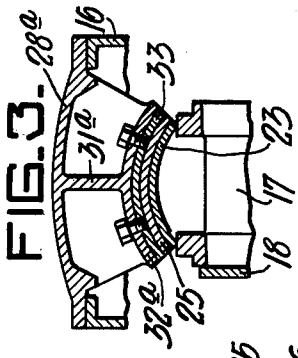


FIG. 3.

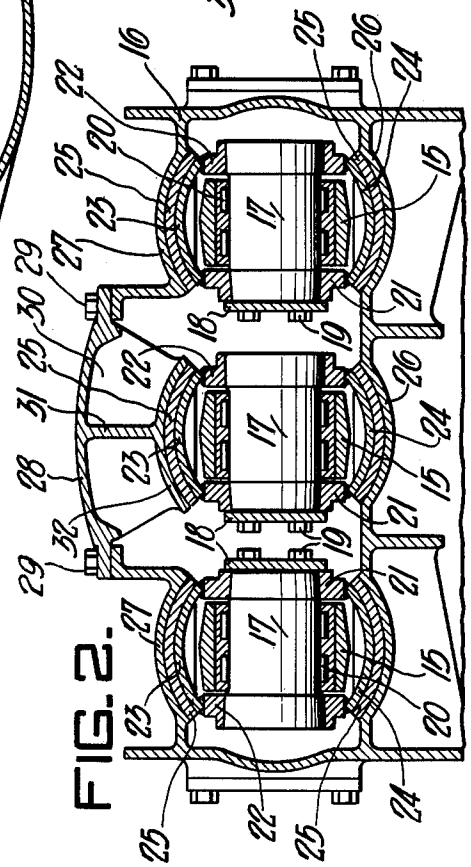


FIG. 2.

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Patented June 29, 1954

2,682,433

UNITED STATES PATENT OFFICE

2,682,433

CROSSHEAD ASSEMBLY

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Application February 2, 1949, Serial No. 74,061

4 Claims. (Cl. 308—3)

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This invention relates to crosshead assemblies for reciprocating pumps which have three or more cylinders in a single bank.

An object of the invention is to provide in reciprocating pumps improved guides for the crossheads of intermediate cylinders that furnish easier access for assembling or dismantling the parts.

A further object of the invention is to provide in reciprocating pumps improved guides for the crossheads of intermediate cylinders in which the guide is fixed to a removable cover on the housing and hence can be assembled or dismantled readily and furnishes ready access to the crosshead parts.

In accomplishing these and other objects of the present invention, I have provided improved details of structure, preferred forms of which are shown in the accompanying drawing, in which:

Figure 1 is a vertical longitudinal sectional view of a reciprocating pump which has a crosshead guide construction embodying features of the present invention;

Figure 2 is a vertical cross sectional view taken substantially on line II—II of Figure 1; and

Figure 3 is a vertical cross sectional view similar to Figure 2, but showing a modified construction.

In the drawing there is shown a reciprocating pump which has a plurality of cylinders **10** in a single bank, in this instance three in number. The pump is illustrated as of the plunger type and has a plunger **12** reciprocable in each cylinder. The plungers are driven from a crankshaft **13**, connecting rods **14** and crossheads **15** in the usual fashion. A housing **16** rotatably mounts the crankshaft and slidably mounts the crossheads.

Pins **17** join each crosshead **15** to its connecting rod **14** and are held in place by plates **18** and projecting fasteners **19**. Anti-friction bearings **20** are interposed between pins **17** and connecting rods **14**. Each crosshead comprises spaced side plates **21** and **22** and spaced top and bottom plates **23** and **24** (Figure 2). The latter plates preferably are arcuate in cross section and are welded at their longitudinal edges to the side plates. Replaceable arcuate bearing shoes **25** are bolted to each of the top and bottom plates of each crosshead. Housing **16** has complementary arcuate guide channels **26** opposite each of the bottom bearing shoes of the three crossheads and complementary arcuate guide channels **27** opposite the top bearing shoes of the two outside crossheads. The guide channels receive the bearing shoes and thus guide movement of the crossheads.

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In accordance with the present invention, the housing has a removable cover plate **28** which is affixed by bolts **29** opposite the top bearing shoe of the central crosshead. The guideway for the top bearing shoe is fixed to the underside of this cover plate. In one preferred arrangement shown in Figures 1 and 2 said cover plate has integral webs **30** and **31** which depend into the housing and carry an integral guide piece **32**. The latter has a downwardly facing guide channel, which receives the bearing shoe **25** for the top plate of the central crosshead.

Alternatively any of the guideways may be equipped with removable bearing shoes like the crossheads. Figure 3 shows a cover plate **28***a* which has a shoe **33** bolted to its guide piece **32***a*. This arrangement has a further advantage that the cover plate can be of a light metal such as aluminum to facilitate handling, while the bearing shoe can be of a wear resistant metal, such as cast iron or bronze.

When the cover plate is removed from or assembled with the housing, guide piece **32** likewise is removed or assembled and thus can be placed automatically on its bearing shoe. The central crosshead parts are readily accessible on removal of only the one integral part from the housing. Therefore it is seen that the present invention provides an especially simple and ready means for gaining access to the central crosshead, as well as facilitating assembly of these parts.

While I have shown and described only certain preferred embodiments of the present invention, it is apparent that modifications may arise. Therefore I do not wish to be limited by the disclosure set forth, but only by the scope of the appended claims.

I claim:

1. A reciprocable mechanism comprising a housing shaped to provide a pair of integral spaced apart outside bottom guides, a pair of integral spaced apart outside top guides directly above said bottom guides, an integral intermediate bottom guide between said outside bottom guides, and an opening between said outside top guides directly over said intermediate bottom guide, a pair of outside crossheads slidably mounted in said housing with their bottom faces received in said outside bottom guides and their top faces received in said outside top guides, an intermediate crosshead slidably mounted in said housing with its bottom face received in said intermediate bottom guide, a cover plate remov-

ably attached to said housing over said opening, and an intermediate top guide carried by the underside of said cover plate for removal therewith and depending into said housing and receiving the top face of said intermediate crosshead.

2. A reciprocable mechanism comprising a housing shaped to provide a pair of integral spaced apart outside bottom guides, a pair of integral spaced apart outside top guides directly above said bottom guides, an integral intermediate bottom guide between said outside bottom guides, and an opening between said outside top guides directly over said intermediate bottom guide, a pair of outside crossheads slidably mounted in said housing with their bottom faces received in said outside bottom guides and their top faces received in said outside top guides, an intermediate crosshead slidably mounted in said housing with its bottom face received in said intermediate bottom guide, a cover plate removably attached to said housing over said opening, integral webs carried by the underside of said cover plate and depending into said housing, and an

intermediate top guide carried by said webs and receiving the top face of said intermediate crosshead.

3. A mechanism as defined in claim 2 in which said intermediate top guide is integral with said webs.

4. A mechanism as defined in claim 2 in which said cover plate and said webs are of lighter weight material than said housing and said intermediate top guide is of wear resistant material fixed to said webs.

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