March 1, 1966 A. W. McPHERSON 3,237,463

DOUBLE ACTING PLUNGER CLAMP

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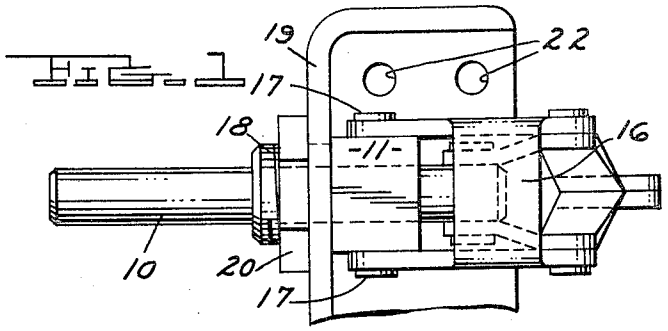

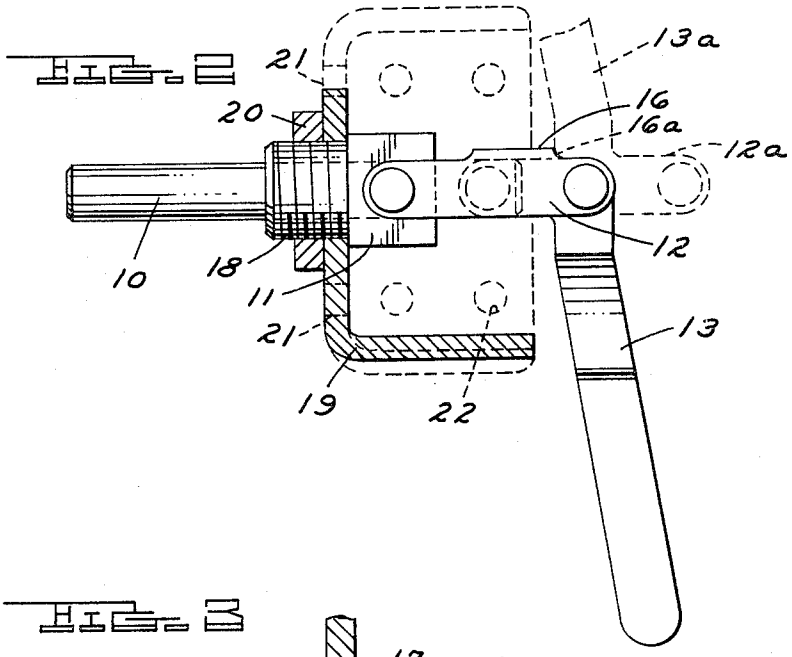

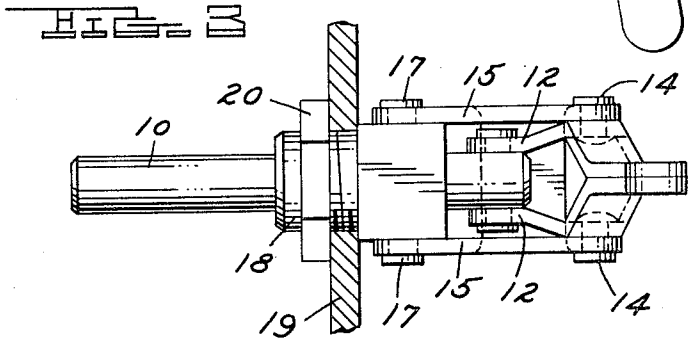

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FIG. 4

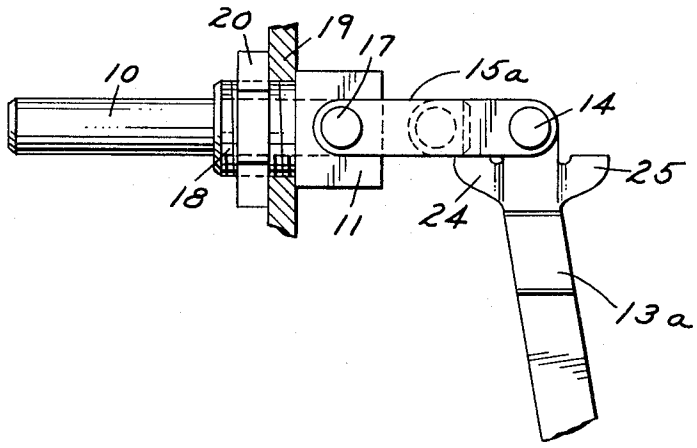


FIG. 5

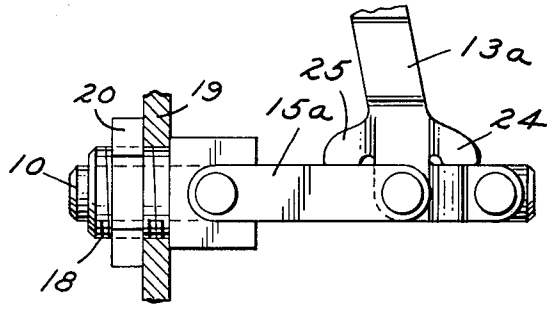
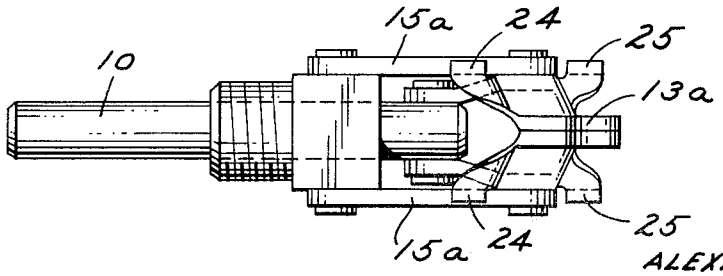


FIG. 6



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DOUBLE ACTING PLUNGER CLAMP

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7 Claims. (Cl. 74—106)

This invention relates to a toggle actuated plunger clamp having common linkage adapted to actuate and lock the plunger in both push and pull directions and provided with further versatility through the incorporation of a substantially universal mounting base.

The objects and advantages of this plunger clamp as well as its construction and operation may best be understood by reference to the drawings disclosing a preferred embodiment and certain modifications thereof wherein:

FIGURE 1 is a plan view of the clamp with the plunger actuated to fully extended position;

FIGURE 2 is a side elevation with the base partially sectioned;

FIGURE 3 is a bottom view of the clamp with the base sectioned and largely broken away to reveal the clamp linkage;

FIGURE 4 is a view similar to FIGURE 2 showing an alternate linkage and stop construction;

FIGURE 5 is a view similar to FIGURE 4 with the plunger actuated to its fully retracted and locked position; and

FIGURE 6 is a bottom view of the modified construction shown in FIGURE 4.

With reference to FIGURES 1–3 the clamp comprises a plunger **10** extending through a closely fitting aperture in a plunger guide **11** to an innermost end which is pinned to a pair of handle links **12** which are integral extensions of handle elements **13** pivotally connected by pivots **14** to a pair of side link elements **15** joined by an integral bridge **16** the forward ends of which are pivotally connected by a pair of pins **17** to sides of the plunger guide **11**. A threaded extension **18** of the plunger guide passes through a circular aperture in the base element **19** being tightly secured thereto in any adjusted position throughout a 360 degree range of adjustment by lock nut **20**. A base **19** is formed as an angle stamping having mounting holes **21** provided in a vertical face as well as further mounting holes **22** in the base portion which extends substantially parallel to the line of action of the clamp. In operation the handle **13** may be actuated to the position shown in FIG. 2 moving the plunger **10** to its fully extended position with the handle links **12** in substantial alignment with the forward and rear pivots **17** and **14** of the side links **15** such handle links **12** being in stop registration with the underside of the bridge element **16**. As shown in phantom in FIG. 2 the handle element **13** can be actuated to a retracting position **13***a* where the handle links **12***a* are again in substantial alignment with the side bar pivots **17**, **14** but with the plunger now in fully retracted position and with the handle elements now in stop registration with the edge **16***a* of the bridge so that the clamp may be fully actuated and locked in either a fully extended "push" position or fully retracted "pull" position utilizing common elements for actuation and stop functions. The ability of the clamp to be mounted in any rotative position relative to the base is illustrated by the 90 degree rotation shown in phantom in FIG. 2.

The operation of the clamp is also illustrated in the modified constructions of FIGS. 4, 5 and 6 wherein simple unbridged side link elements **15***a* are employed and

stop ear extensions **24** and **25** are integrally provided in the handle element **13***a* for alternate engagement the bottom side of the links **15***a* when the plunger **10** is in extended position and with the top side of the links **15***a* when the plunger **10** is in retracted position.

While a preferred embodiment and modification have been shown and described above in detail, it will be understood that further modifications might be resorted to without departing from the scope of the invention as defined in the following claims.

I claim:

1. A double acting plunger clamp comprising a plunger guide, a clamp plunger moving along a linear path established by said guide, a handle having extension linkage pivotally connected to one end of such plunger, interconnecting linkage pivotally anchored to said guide and pivotally connected to said handle at a position spaced from said first pivotal connection, the respective pivotal connections being substantially alignable with said plunger in alternate positions wherein said first named pivotal connection is alternately between and exterior of said other pivotal connections, and positive stop means for arresting the travel of said handle at the end of the plunger stroke to either of its extreme positions wherein said alignment of pivotal connections takes place.

2. A double acting plunger clamp as set forth in claim 1 wherein said interconnecting linkage comprises a pair of side links integrally connected by a bridge.

3. A double acting plunger clamp as set forth in claim 2 wherein said bridge is operative to stop the travel of said handle in either of its extreme positions.

4. A double acting plunger clamp as set forth in claim 1 including a base having a wall extending substantially normal to the plunger path, a circular aperture through said wall, said plunger guide having an extension passing through said circular aperture providing swivel adjustment for said plunger clamp relative to said base, and means for securing said plunger clamp in any adjusted position relative to said base.

5. A double acting plunger clamp as set forth in claim 1 wherein said interconnecting linkage comprises a pair of side links, and said stop means comprises ear extensions on said handle alternately engageable with opposite edges of said side links.

6. A double acting plunger clamp as set forth in claim 4 wherein said base comprises an angle bracket having an attachment surface substantially parallel to the line of action of said plunger.

7. A double acting plunger clamp comprising a cylindrical plunger, a guide for said plunger having a mating cylindrical aperture therethrough, a handle having a pair of spaced links pivotally connected at either side of one end of said plunger, said links having integral right angle extensions converging to form a handle, interconnecting side links pivotally connected to said guide and to the right angle handle link juncture, and stop means for arresting the travel of said handle in actuating said linkage at either of two extreme positions wherein said respective pivotal connections are all in substantial alignment with said plunger.

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