

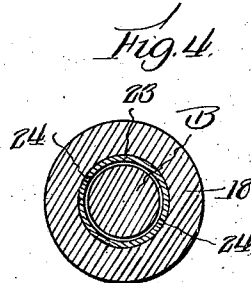
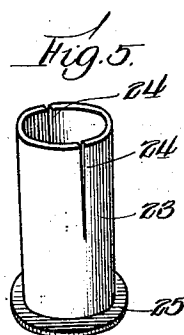
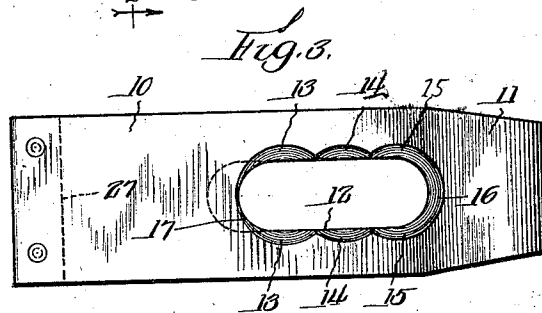
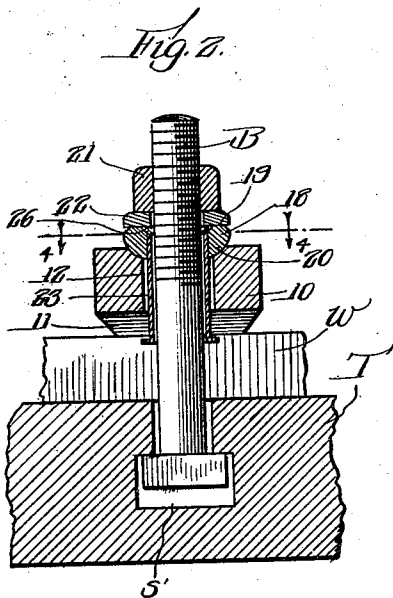
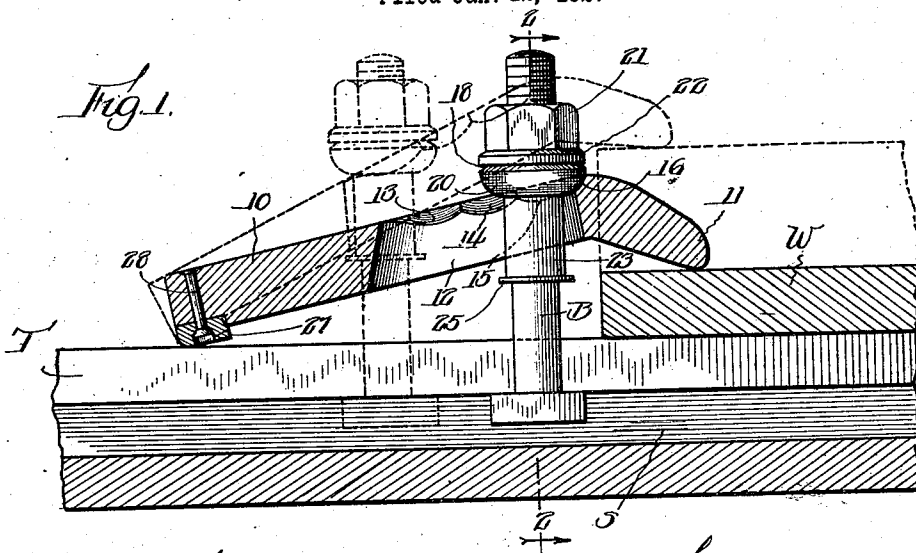
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MACHINIST'S WORK CLAMP

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UNITED STATES PATENT OFFICE.

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MACHINIST'S WORK CLAMP.

Application filed January 12, 1927. Serial No. 160,757.

This invention relates to a well known type of machinist's work clamp which, generally described, comprises a slotted or apertured steel bar engaged at one end with the work and supported at its other end on the work table or on a temporary block on the latter, and a clamp bolt passed through the slot or aperture of the bar and having a head at its lower end engaged in a T-slot of the table and a nut on its upper end that screws down onto the top of the bar.

An object of the invention is to provide a construction wherein the saddle member shall be connected to the bar, with capacity of movement to any of its working positions on the latter, so as to avoid the annoyance of accidental misplacement or loss of the saddle member; and another object is to provide a work clamp of the type mentioned which may be safely used without danger of marring or defacing the top of the work table.

Other objects and attendant advantages of the invention will be apparent to persons skilled in the art from the following detailed description, taken in connection with the accompanying drawing, wherein I have illustrated a simple and practical embodiment of the invention, and in which—

Fig. 1 is an elevation of my improved work clamp, with the clamp bar in central vertical longitudinal section, showing in full and dotted lines respectively two work-engaging positions thereof;

Fig. 2 is a vertical transverse section, on the line 2—2 of Fig. 1;

Fig. 3 is a top plan of the clamp bar, viewing the latter in a substantially horizontal position;

Fig. 4 is an enlarged horizontal section through the saddle member, bolt, and locking sleeve, on the line 4—4 of Fig. 2;

Fig. 5 is a perspective elevation of the locking sleeve.

In the drawing T represents a section of the work supporting table of a drill press or other machine, or a machinist's work bench, such tables and benches being commonly formed with T-slots S therein to accommodate in a sliding manner the head and shank of a bolt B through which a clamp bar is pressed into holding engagement with a piece of work W to be drilled, planed, or otherwise operated on.

10 designates the clamp bar, which preferably consists of a flat straight bar of steel

of uniform depth and width provided at one end thereof with an integral downwardly and forwardly inclined work-engaging nose 11. The body of the clamp bar is formed with a longitudinal slot 12 located midway between its side edges, said slot being of such a width that the bolt B, and a locking sleeve (hereinafter described) encircling the same, may slide freely there-through. In the upper side edges of the slot 12 are formed a plurality of contiguous concave seats, such as 13, 14 and 15, of segmental spherical form; the seats 15 at the forward end being preferably formed continuous with a seat 16 of like character formed in the upper forward end edge of the slot, and the seats 13 at the rear end being preferably extended over the upper rear end edge of the slot, as shown at 17. An annular saddle member 18 that has a loose sliding fit on the bolt B is formed with a flat upper side 19 and a transversely rounded or convex lower side 20 of segmental spherical form that has a universal swivel fit on the seats 15 and 16, or the seats 14, or the seats 13 and 17, according to the position of the bolt in the slot. A nut 21 on the upper end of the bolt B, when screwed down on the latter, causes the nose 11 of the bar to securely clamp the work on the table; and owing to the universal swivel fit of the saddle on any of the several seats, the bar, when under pressure, is free to adjust itself to a firm wide grip on the work where the engaged surface of the latter may not be perfectly level, while the saddle at the same time may always adjust itself in any direction to a full bearing on its seat without any side thrust on the bolt under either endwise or sidewise tilting or canting of the clamp bar. A washer 22 is preferably interposed between the nut and the saddle member to prevent the turning of the latter on its seat during the final compressive turning movements of the nut. By making the concave saddle seats contiguous to each other, it is possible to provide on a slot of given length a maximum number of such seats capable of co-operating with a saddle having a seat-engaging portion adapted to the seats, thereby combining compactness of size with a large adjustment capacity.

In a tool of this character it is desirable to provide means for preventing accidental loss or misplacement of the saddle member, and this I accomplish by a simple device

which locks the saddle to the clamp bar while not interfering at all with the functioning of either of said parts. This locking device preferably takes the form of a spring

metal sleeve 23 (Fig. 5) encircling the bolt B and extending through the slot of the bar, said sleeve at its upper end having a tight friction fit in the bore of the saddle (which may be obtained by making the external diameter of the sleeve slightly larger than the diameter of the bore of the saddle and splitting the upper end of the sleeve as shown at 24), and at its lower end formed with an annular flange or bead 25 of greater diameter than the width of the slot 12. Preferably the sleeve is permanently united to the saddle by swaging its upper end into a countersink in the bore of the saddle, as shown at 26 in Fig. 2.

In the use of tools of this character the surface of the table or bench is frequently dented, scratched and otherwise marred by the heel of the clamp bar under the heavy pressure applied to the latter. Another feature of my invention, which is designed to obviate this objectionable action of the tool, consists of a block or pad 27 of soft material, relatively to that of the table or bench, that is attached, as by countersunk rivets 28, to and crosswise of the lower side of the heel of the bar so as to rest directly on the table

or bench. This pad, which may be of fibre, lead, or other like soft material, transmits the pressure without denting or otherwise defacing the surface on which it rests.

I claim—

1. A machinist's work clamp, comprising a bar formed with a longitudinal vertical slot therein, said slot having a plurality of seats in its upper edge, a saddle member shaped to fit and swivel in said seats, a clamp bolt extending through said slot and saddle, a nut on the upper end of said bolt, and means secured to said saddle member and locked in said slot serving to retain said saddle member engaged with said bar when said bolt is withdrawn.

2. A machinist's work clamp, comprising a bar formed with a longitudinal vertical slot therein, said slot having a plurality of seats in its upper edge, a saddle member shaped to fit and swivel in said seats, a clamp bolt extending through said slot and saddle, a nut on the upper end of said bolt, and means for locking said saddle member to said bar comprising a sleeve attached at its upper end to said saddle member, extending through said slot around said bolt, and formed with a flanged lower end of greater diameter than the width of said slot.

ALBANO SCHMALZ.