April 10, 1945. O. KYLIN 2,373,637

TURRET SLIDE CLAMP

Filed Feb. 13, 1943

FIG. 1.

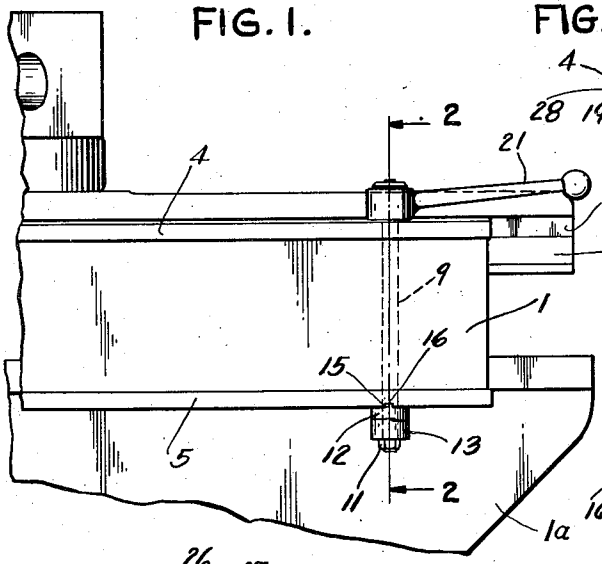


FIG. 2.

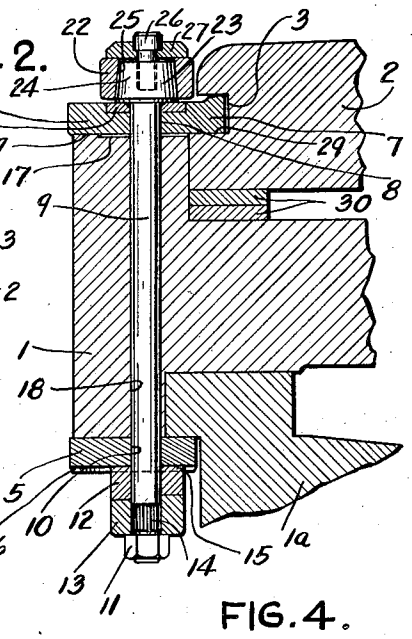


FIG. 3.

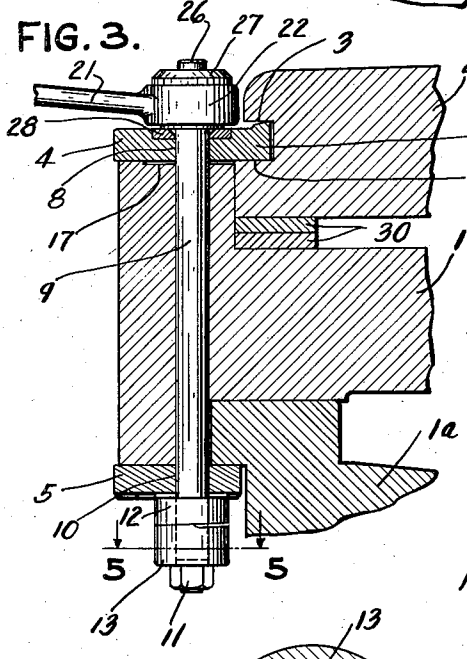


FIG. 4.

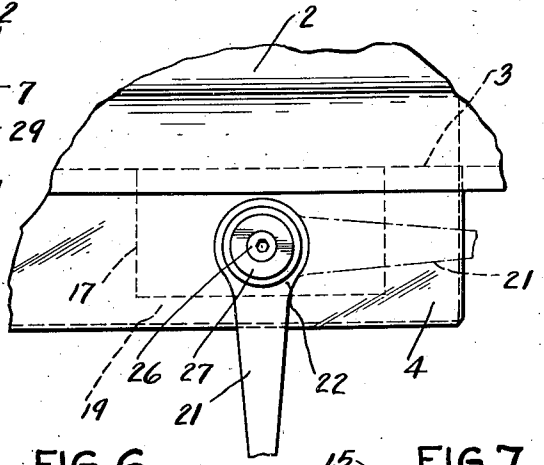


FIG. 5.

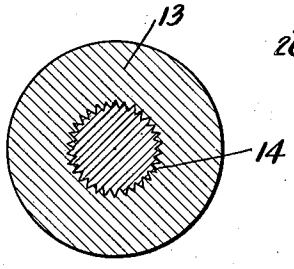


FIG. 6.

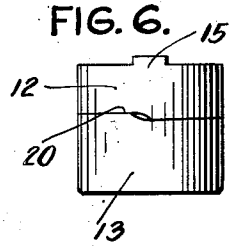
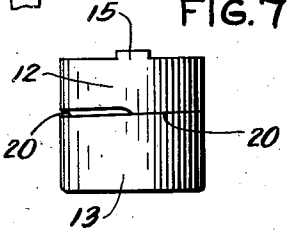


FIG. 7.



INVENTOR.
OSKAR KYLIN
BY
Hawgood & Van Horn
ATTORNEYS

Patented Apr. 10, 1945 2,373,637

UNITED STATES PATENT OFFICE

2,373,637

TURRET SLIDE CLAMP

Oskar Kylin, Cleveland Heights, Ohio

Application February 13, 1943, Serial No. 475,709

4 Claims. (Cl. 29—1)

My invention relates to machine tools and more particularly to an improved clamping means for binding a turret slide to the saddle of the machine tool.

One of the objects of the invention is to obtain, by means of an improved clamping device, a more powerful binding action between the turret slide and the saddle of a machine tool.

Another object of the invention is to provide a slide clamp of the above named character which is of simple construction and which may be operated with minimum effort, yet which is so constructed that a very powerful binding force may be applied to the slide.

Other objects and advantages of my invention will become more apparent as the following description of an embodiment of the invention progresses, reference being made to the accompanying drawing in which like reference characters are employed to designate like parts throughout the same.

In the drawing—

Figure 1 is a side elevation of a form of my invention shown in use,

Figure 2 is an enlarged transverse section taken on line 2—2 of Figure 1, showing the clamp in unclamped position,

Figure 3 is a view similar to that of Figure 2 and shows the clamp in clamped position,

Figure 4 is a top plan view of the device applied in use showing the clamp lever in clamped position in full lines and in unclamped position in broken lines,

Figure 5 is an enlarged section taken on line 5—5 of Figure 3.

Figure 6 is an enlarged detail of the clamp cams in unclamping position, and,

Figure 7 is a similar view of the cams in clamping position.

Referring more particularly to the drawing, I have shown an end of a machine tool saddle 1 which overlies the bed 1a of the machine. A slide for carrying either tools or a work piece is indicated at 2 and is provided with a recess 3 extending along its front face. Saddle caps 4 and 5 are carried by the saddle, and are secured thereto by means of bolts or the like. The upper saddle cap has a projecting slide engaging portion 7 which extends into the recess 3 of the slide for binding engagement therewith and is apertured at 8 to receive the binding bolt 9.

The bolt 9 extends vertically through the saddle and passes through aligned openings 8 and 10 in the respective saddle caps 4 and 5, the lower end of the bolt being threaded to receive the threaded cam locking nut 11.

The lower end of the clamping bolt 9 carries cam members 12 and 13 and is splined or serrated as at 14 to receive the splined or serrated lower cam 13 for rotation with the bolt. The upper cam 12 is held against rotation by means of a rib 15 formed transversely of its upper surface and which seats in a groove or slot 16 extending across the lower face of the lower saddle cap 5.

The upper face of the saddle is formed with a depression area 17 surrounding the bolt opening 18 to provide clearance between this surface and the lower surface of the cap 4. The depression extends rearwardly of the cap to the inner edge thereof, while the adjacent forward edge 19 projects slightly above the depression area 17 and provides in effect a fulcrum for the cap when it is drawn downwardly into binding engagement with the slide 2.

When the cams 12 and 13 are assembled on the lower end of the bolt 9 and the nut 11 is tightened the upper cam 12 is locked against rotation with the bolt by means of the rib and slot while the lower cam is fixed for rotation with the bolt by means of the interfitting splines or serrations 14 on the cam and bolt.

The engaging cam surfaces 20 of the respective cam members are therefore slidable one upon the other when the bolt is rotated in either direction.

An operating handle 21 having a hub 22 is removably fitted to the upper end of the bolt 9 which is headed at 23. The walls 24 of the bolt head may be inclined to converge upwardly, while the internal wall of the opening 25 in the hub is similarly inclined to provide an effective friction grip or lock between the hub and head when the threaded stud 26 is tightened in the head against the disc 27 overlying the hub upper surface. A bearing plate 28 may be inserted in the saddle cap 4 to provide a suitable bearing surface for the under surface of the head 23 during the clamping or binding action.

It will be noted that the respective cam faces 20 are so disposed that by swinging the operating lever 21 through an arc of only about 90° as indicated in Figure 4, a very great clamping pressure is exerted through the bolt 18 and the saddle caps 4 and 5 to bind and securely hold the slide 2 against movement on the saddle. By this arrangement a very powerful binding force may be applied with relatively little effort and likewise the binding forces may readily be re-

leased by swinging the lever in a reverse direction.

In use, as the operator swings the lever 21 from an unclamping position as in Figure 1 or as shown in broken lines in Figure 4 to the full line position in Figure 4, the cam 13 is rotated from its position in Figure 6 to a full binding position as shown in Figure 7, thus drawing the bolt 18 and the saddle cap 4 downwardly to bring the projecting portion 7 of the cap into binding engagement with the lower wall of the slot 3 in the slide. During this movement of the cam 13, the cam 12 is locked against rotation by means of the rib 15 and the slot 16. Very little downward movement is required to effect a strong binding action and for this reason the depression area 17 in the saddle upper surface may be rather shallow and only slightly below the level of the lower wall 29 or the slot 3.

Suitable bearing strips may be provided at 30 for supporting the slide on the saddle.

Various changes may be made in the details of construction and arrangement of parts without departing from the spirit of the invention on the scope of the appended claims.

I claim:

1. The combination with a saddle and a slide on said saddle, of releasable means for binding the slide to the saddle, said means including a saddle cap on said saddle and having a portion engageable with said slide, and means for drawing the slide engaging portion of the cap into binding engagement with the slide, said last named means comprising a rotatable pressure member extending through the cap, a cam rotatable with said member, and cam coacting means fixed relative to the cam and engageable thereby.

2. The combination with a saddle and a slide on said saddle, of releasable means for binding the slide to the saddle, said means including a saddle cap on said saddle and having a portion engageable with said slide, and means for drawing the slide engaging portion of the cap into binding engagement with the slide, said last named means comprising a rotatable pressure member extending through the cap and a pair of relatively cooperating cams, one of said cams being fixed with respect to the pressure member and the other of said cams being fixed with respect to the saddle.

3. In a machine tool, the combination with a saddle, and a slide member on said saddle, of releasable means for exerting a powerful binding pressure upon the slide to prevent relative motion between the saddle and the slide, said means including a saddle cap having a portion projecting into engagement with an adjacent portion of the slide, a pressure member rotatable in the saddle underlying the cap, said saddle in the area of the pressure member being partially relieved away from the slide, and means carried by the saddle and the pressure member for drawing the projecting portion of the cap into binding engagement with the slide when the pressure member is rotated in one direction.

4. In a machine tool, the combination with a saddle, and a slide member on said saddle, of releasable means for exerting a powerful binding pressure upon the saddle to prevent relative motion between the saddle and the slide, said means including a saddle cap having a portion projecting into engagement with an adjacent portion of the slide, a pressure member rotatable in the saddle underlying the cap, said saddle in the area of the pressure member being partially relieved along its upper surface away from the slide, and means carried by the saddle and the pressure member for drawing the projecting portion of the cap into binding engagement with the slide when the pressure member is rotated in one direction, said last named means comprising a pair of relatively movable cooperating cams.

OSKAR KYLIN.