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TOGGLE LEVER ACTUATED SLIDING JAW VISE

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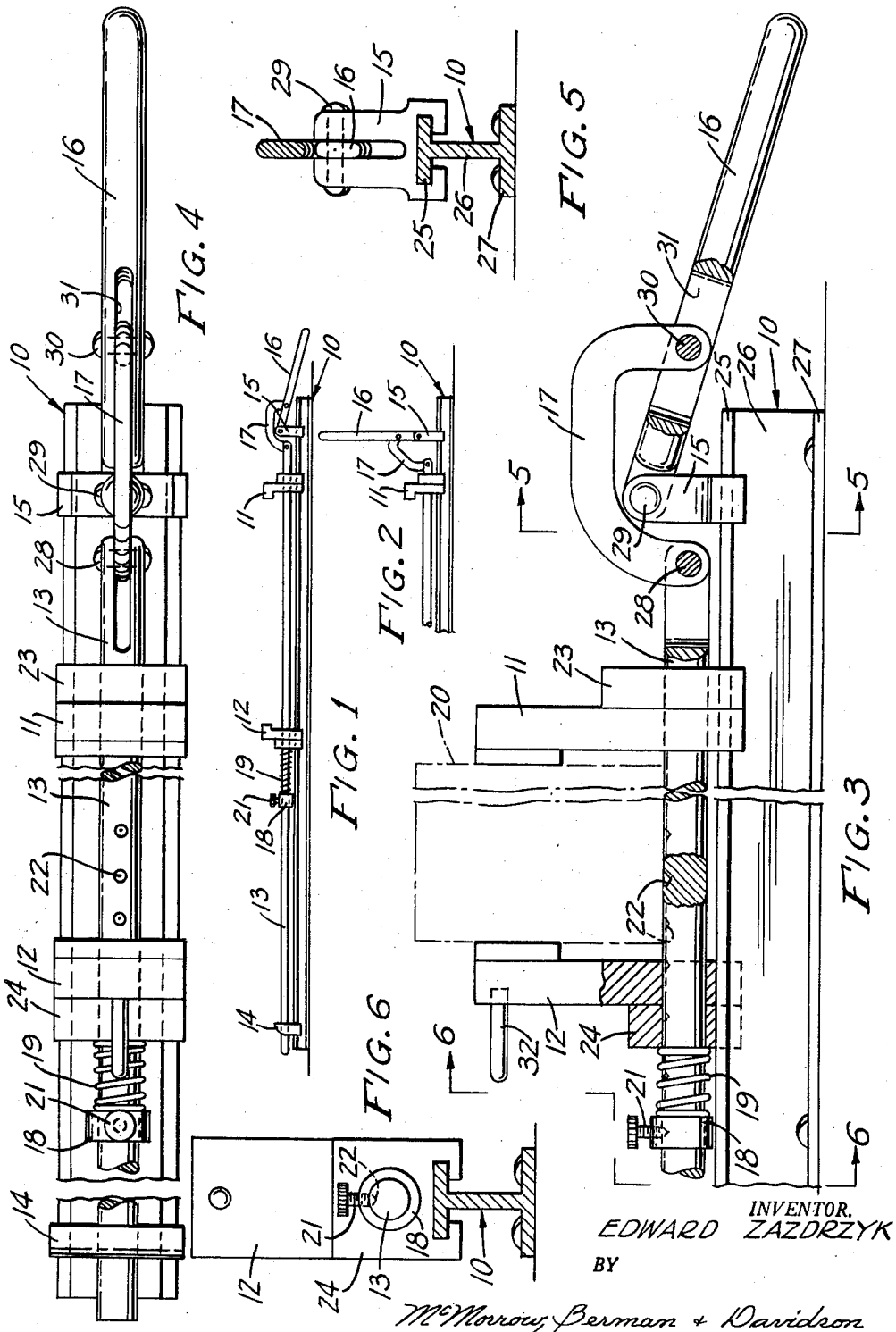


FIG. 1

FIG. 2

FIG. 3

FIG. 4

FIG. 5

FIG. 6

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TOGGLE LEVER ACTUATED SLIDING JAW VISE

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2 Claims. (Cl. 144—303)

The present invention relates to work holders and in particular to a vise having a sliding jaw.

An object of the present invention is to provide a sliding jaw vise which has means enabling the user to quickly and easily adjust the vise for holding work of various widths.

Another object of the present invention is to provide a sliding jaw vise which has means for holding the vise in locked position, such means being automatic in operation upon the closing of the vise jaws about a workpiece.

A further object of the present invention is to provide a vise of sturdy construction, one simple in structure and of few parts, one which is highly effective in action, and one which is economically feasible.

These and other objects and advantages of the present invention will be fully apparent from the following description when taken in connection with the annexed drawing, in which:

Figure 1 is a side elevational view of the vise of the present invention, showing it in locked position,

Figure 2 is a portion of the assembly of Figure 1 showing the vise in unlocked position,

Figure 3 is a side elevational view, on an enlarged scale, with an intermediate portion broken away, showing the vise in locked position with a workpiece shown in dotted lines held between the jaws of the vise,

Figure 4 is a plan view with a portion of the vise of the present invention broken away,

Figure 5 is a sectional view taken on the line 5—5 of Figure 3, and

Figure 6 is a sectional view taken on the line 6—6 of Figure 3.

Referring in greater detail to the drawing in which like numerals indicate like parts throughout the several views, the sliding jaw vise of the present invention comprises a base 10, a vertically-disposed first jaw 11 rising from the base 10 inwardly of one end thereof, and a vertically-disposed second jaw arranged in face to face relation with respect to the first jaw 11 and carried by the base 10 for movement toward and away from the first jaw 11. A pull rod 13 is arranged longitudinally of and spaced above the base 10 and extends through aligned apertures in the first and second jaws, 11 and 12, respectively.

Means is provided adjacent the end of the base 10 remote from the first jaw 11 connecting the pull rod 13 to the base 10 for longitudinal sliding movement therealong. Specifically, this means consists in an upright bracket 14 having a hole therethrough receiving the adjacent portion of the pull rod 13. The lower end of the bracket 14 is fixedly secured to the top of the base 14.

A vertically-disposed post 15 rises from the base 10 adjacent the one end of the base having the first jaw 11 and is positioned inwardly thereof, the lower end of the post 10 being fixedly secured to the top of the base. The end of the pull rod 13 which is remote from the portion of the pull rod which is supported in the

bracket 14 is positioned between the post 15 and the first jaw 11.

An upright lever 16 has its lower end connected to the upper end of the post 15 for swinging movement from the upright position, as shown in Figure 2, to a downwardly-sloping position longitudinally of and away from a pull rod 13 as shown in Figures 1, 3, and 4.

An arcuately-shaped link 17 is positioned on one side of the lever 16 and has one end operatively connected to the adjacent end of the pull rod 13 and has its other end pivotally connected to the lever 16 intermediate the ends of the latter. The link 17 is positioned so that upon execution of movement of the lever 16 from the upright position to the downwardly-sloping position, the concave face of the link rests upon the upper end of the post 15. The ends of the link 17 together with the pivotal connection of the lever 16 to the upper end of the post 15 forms an over center connection of the lever 16 to the pull rod 13.

Means is carried upon the pull rod 13 operatively connecting the second jaw 12 to the pull rod 13 for movement toward the first jaw 11 in response to execution of movement of the lever 16 from its upright position to its sloping position. Specifically, this means consists in a collar 18 slidably mounted upon the pull rod 13 exteriorly of the second jaw 12. A coil spring 19 surrounds the portion of the pull rod 13 between the collar 18 and the second jaw 12 and has one end bearing against the collar 18 and has the other end bearing against the adjacent portion of the second jaw 12 and biased the second jaw 12 towards the first jaw 11, the spring 19 being of such structure as to tightly hold a workpiece indicated by the reference numeral 20 in Figure 3, when the latter is held between the first jaw 11 and the second jaw 12.

Releasable lock means is carried by the collar 18 engageable with a selected one of a series of cooperating means arranged in spaced relation along the adjacent portion of the pull rod 13 for securing the collar 18 on the pull rod 13 for movement with the pull rod 13 towards the first jaw in response to execution of movement of the lever 16 from its upright position to its sloping position. Specifically, this releasable lock means consists in a thumbscrew 21 threadedly engaged in a threaded opening in the collar 18 and receivable in the recesses 22 in the upper portion of the pull rod 13, the recesses 22 constituting the cooperating means.

Blocks 23 and 24 are fixed to the first and second jaws 11 and 12, respectively, and serve to stiffen those jaws upon the base 10. The base 10 is formed from an I-beam which has a flange 25 on one end of the web 26 and another flange 27 on the other end of the web 26. The one end of the pull rod 13 to which is pivotally connected the one end of the link 17 is bifurcated and receives the end of the link 17 between its furcations. The post 15 is slotted from its upper end inwardly to a point spaced above the flange 25 of the base 10 and receives the other end of the link 17 therein. A pivot pin 28 extending through aligned holes in the bifurcated end of the pull rod 13 and the one end of the link 17 and connects the pull rod 13 to the link 17. Another pivot pin 29 extends through aligned holes in the post 15 and the adjacent end of the lever 16 and secures the lever 16 to the post 15. A final pivot pin 30 extends through aligned holes in the lever 16 and the other end of the link 17 connecting the lever and link together, the lever 16 being slotted as indicated by the reference numeral 31 in Figures 3 and 4.

In use, the sliding jaw vise of the present invention is used to hold a workpiece 20 upon a bench or other support. Upon disengagement of the thumbscrew 21 from the one of the recesses 22 in which it is seated,

the second jaw **12** may be moved upon the pull rod **13**, a handle **32** projecting from the rear face of the second jaw **12** providing an easily-grasped means for moving the jaw **12**. The second jaw **12** is moved towards the workpiece and engages it on one side with the first jaw **11** engaging the workpiece on the other side. The collar **18** is then shifted to compress the spring **19** and to a position in which the thumbscrew **21** may be again seated in one of the recesses **22** with the spring **19** in lightly compressed condition, holding the workpiece **20** securely between the first jaw **11** and the movable jaw **12**. The lever **16** is then swung from its upright position to its downwardly-sloping position pulling the pull rod **13** to hold the workpiece **20** between the jaws. When the lever **16** is in its downwardly-sloping position, it is held there by the over center action of the connection of the lever with the pull rod **13**. The workpiece may be instantly released by pulling the lever upwardly to its former upright position.

What is claimed is:

1. A vise comprising a base, a vertically-disposed first jaw rising from said base inwardly of one end thereof, a vertically-disposed second jaw arranged in face to face relation with respect to said first jaw and carried by said base for movement toward and away from said first jaw, a pull rod arranged longitudinally of and spaced above said base and extending through said first and second jaws, an upright bracket adjacent the other end of said base connecting one end of said pull rod to said base for longitudinal sliding movement therealong, a vertically-disposed post rising from said base adjacent one end of the latter, said pull rod having its other end between said post and said first jaw, a lever having its lower end connected to said post for swinging movement from an upright position to a downwardly-sloping position longitudinally of and away from said pull rod, an arcuately-shaped link having one end operatively connected to the adjacent end of said pull rod and having the other end pivotally connected to said lever intermediate the ends of the latter, said link being positioned so that upon execution of movement of said lever from the upright position to the downwardly-sloping position its concave face rests upon the upper end of said post, a collar slidably mounted on said pull rod exteriorly of said second jaw, a coil spring surrounding the portion of said pull rod between said collar and said second jaw and having one end bearing against said collar and having the other end bearing against said second jaw biasing said second jaw towards said first jaw, and releasable lock means carried by said collar engageable with a selected one of a series of cooperating means arranged in spaced relation along the adjacent portion of said pull rod securing said collar on said pull rod for movement toward said first jaw in response to execution of movement of said lever from its upright position to its sloping position.

2. A vise comprising a base, a vertically-disposed first jaw rising from said base inwardly of one end thereof, a vertically-disposed second jaw arranged in face to face relation with respect to said first jaw and carried by said base for movement toward and away from said first jaw, a pull rod arranged longitudinally of and spaced above said base and extending through said first and second jaws, a bracket adjacent the other end of said base connecting one end of said pull rod to said base for longitudinal sliding movement therealong, a vertically-disposed post rising from said base adjacent said one end of the latter, said pull rod having its other end between said post and said first jaw, a lever having its lower end connected to said post for swinging movement from an upright position to a downwardly-sloping position longitudinally of and away from said pull rod, an arcuately-shaped link having one end operatively connected to the adjacent end of said pull rod and having the other end pivotally connected to said lever intermediate the ends of the latter, the ends of said link together with the pivotal connection of said lever with said post forming an over center connection of said lever to said pull rod, said link being positioned so that upon execution of movement of said lever from the upright position to the downwardly-sloping position its concave face rests upon the upper end of said post, a collar slidably mounted upon said pull rod exteriorly of said second jaw, a coil spring surrounding the portion of said pull rod between said collar and said second jaw and having one end bearing against said collar and having the other end bearing against said second jaw biasing said second jaw towards said first jaw, and releasable lock means embodying a thumbscrew carried by said collar engageable with a selected one of a series of cooperating means embodying a plurality of recesses arranged in spaced relation along the adjacent portion of said pull rod securing said collar and said pull rod for movement toward said first jaw in response to execution of movement of said lever from its upright position to its sloping position.

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