

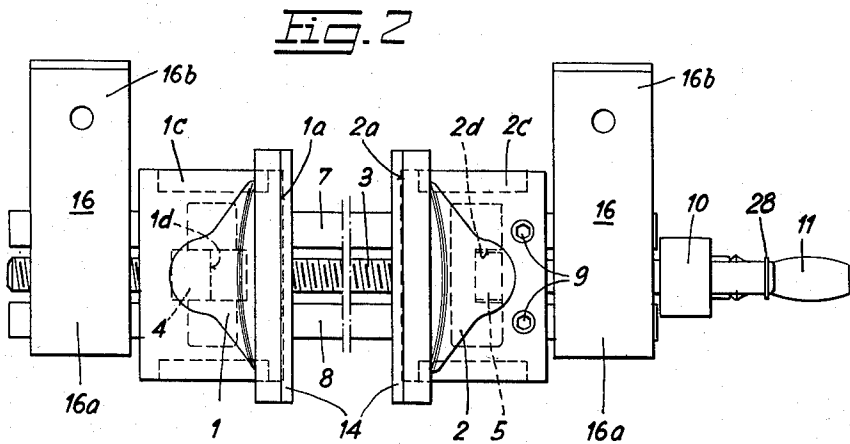
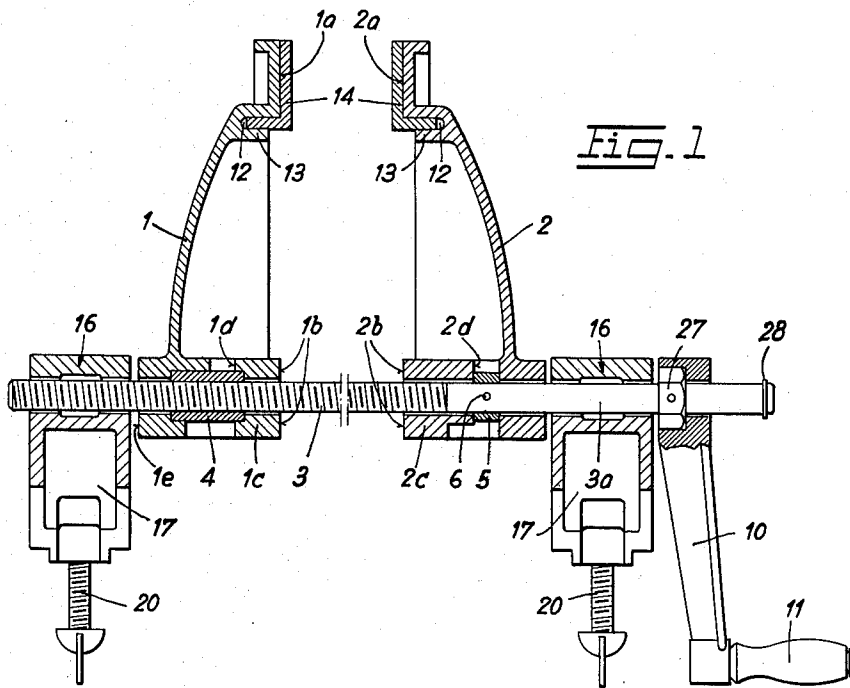
July 4, 1961

K. ZYSSET  
PARALLEL VISE

2,990,738

Filed June 5, 1958

2 Sheets-Sheet 1



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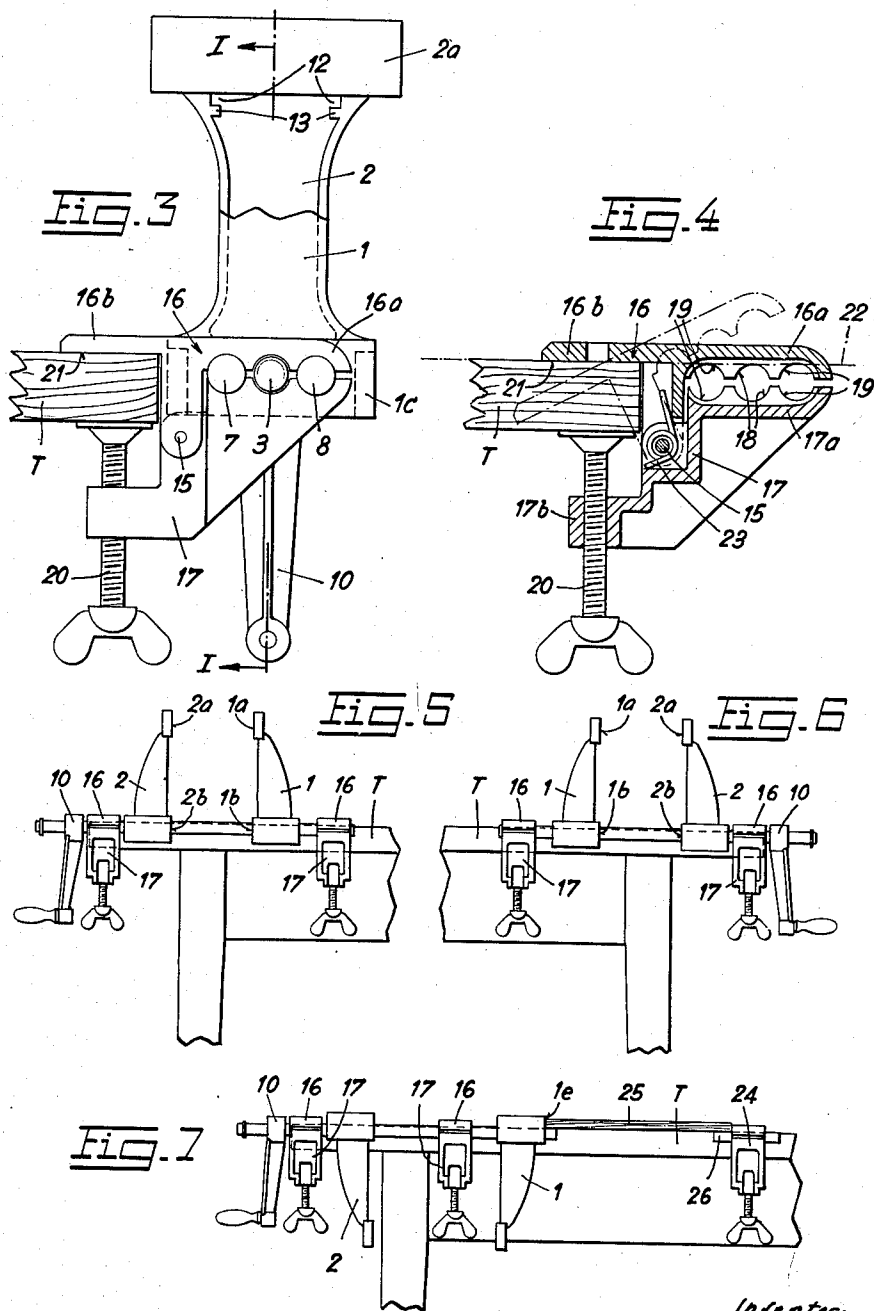
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1

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PARALLEL VISE

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The invention relates to a vise, and more particularly to a clamp-on parallel vise clampable to a support.

It is known to provide a bench vise with an integral screw clamp for attachment to a work table or the like. Because of the relatively weak support furnished by such a single screw clamp, clamp-on vises are commonly limited to small sizes and to applications where the clamping force required is relatively small. Such clamp-on vises of the prior art also lack the versatility required by many trades in the available positions of the clamped work piece.

The clamp-on parallel vise of the invention provides for jaws the relative position of which may be varied by means of a drive screw and which are mounted on at least one guide rod, said guide rod being clamped to a support by means of detachable clamps.

An object of the present invention is the provision of a clamp-on vise which can be very firmly fastened to a support.

Another object is to provide such a vise which is readily adapted to a variety of positions.

A further object is the provision of a vise which is adapted to clamp objects which are supported on a work table or the like.

Yet another object is to provide such a vise in which the jaws are movable parallel to the front edge of a work table or other support whereby objects resting on the support and projecting beyond the front edge may be clamped between the jaws.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings in which like reference numerals designate like parts throughout the figures thereof, and wherein:

FIG. 1 shows a sectional side view of a preferred embodiment of the vise of the invention;

FIG. 2 shows a top plan view of the apparatus illustrated in FIG. 1;

FIG. 3 is a front elevation, partly broken away, of the apparatus of FIG. 1;

FIG. 4 is a sectional view of the screw clamp of FIG. 3;

FIG. 5 illustrates an application of the vise of FIG. 1;

FIG. 6 shows an example of inversed application of the vise of FIG. 5; and

FIG. 7 illustrates use of the vise for the clamping of work pieces longer than the drive-screw length.

Referring now to the drawings, there is shown in FIG. 1 a preferred embodiment of the invention, a vise member or jaw 1, having an upper clamping face 1a and a lower clamping face 1b arranged on the base portion 1c of the jaw 1 opposite a second vise element or jaw 2 which is substantially of the same shape and structure as jaw 1 and is also provided with an upper clamping face 2a and a lower clamping face 2b arranged on the base 2c of jaw 2 opposite the corresponding faces of jaw 1. Jaw 1, furthermore, has a third clamping face 1e provided on the base 1c facing outward and away from jaw 2. The five faces enumerated above are substantially aligned in parallel relation. Jaws 1 and 2 are formed with respective recesses 1d and 2d in the bases thereof, recess 1d holding a drive nut 4 the threads of which are engaged by the threaded portion of drive screw 3 which

2

passes through the base portions 1c and 2c of jaws 1 and 2 respectively at right angles to the clamping faces. The screw 3 is provided with a smooth portion 3a which passes through recess 2d of jaw 2 and is rotatably, but not slidably supported therein. A collar 5 is fixedly mounted on screw portion 3a by means of pin 6 and engages a mating portion base portion 2c to prevent axial movement of screw 3 in jaw 2. A hexagon-shaped collar is fixedly fastened on screw 3 near the end of the smooth section 3a and engages a hexagonal recess in a crank 10 equipped with a handle 11.

Screw 3 passes freely through openings in two identical screw clamps having upper jaw members 16 and lower jaw members 17. Clamping screws 20 are threaded into the lower jaws 17.

The upper clamping faces 1a and 2a of jaws 1 and 2 respectively are provided with facings 14 of soft material such as lead or plastic of L-shaped cross section. The soft facings are held to the jaws by insertion of the short arm of the L-shape in grooves 12 formed in the jaws between the upper clamping faces 1a, 2a and lips 13.

As best seen in FIG. 2, there are provided twin cylindrical guide rods 7, 8 symmetrically arranged on either side of screw 3. The guide rods pass through openings in the jaws 1 and 2 at right angle to the jaw faces and parallel to screw 3, and are fastened to jaw 2 by means of set screws 9.

FIGS. 3 and 4 illustrate the structure of the screw clamp of the invention and its cooperation with the guide rods 7 and 8. The upper jaw member 16 of the screw clamp is provided with a lug intermediate the two ends thereof which is pivotally linked to corresponding lugs on the lower jaw member 17 by means of a pin 15, whereby the ends of each jaw member are displaced at an angle of less than 180° relative to pin 15. The upper and lower jaw members form a pair of coaxing two-armed levers having their ends on different sides of a plane passing through pivot 15 and thus arranged to clamp the table or support T by means of a pair of coordinated arms 16b and 17b between the clamping screw 20 which is threadedly supported in arm 17b and a flat or knurled plane clamping face 21 of arm 16b. The other pair of arms 16a and 17a is formed with paired recesses 19 of semi-circular cross section mating that of the cylindrical guide rods 7 and 8. A recess 18 of a cross section greater than that of screw 3 is arranged between recesses 19, screw 3 is therefore freely movable in recess 18. The top of recesses 19 in upper jaw member 16 is aligned with the horizontal plane of clamping face 21 as indicated by line 22. A spring 23 loosely mounted on pin 15 and abutting against a downward projection on jaw arms 16a and 17a urges arms 16b and 17b apart, while urging arms 16a and 17a toward each other.

The jaw 2 in which the drive screw 3 is rotatably, but not slidably mounted, and in which guide rods 7 and 8 are fixedly held by set screws 9 corresponds to the stationary jaw of a conventional vise. It is rotatably fastened to the screw 3 at a distance from the hexagonal collar 27 slightly greater than the width of clamping jaw 16 and is fixed to the guide rods 7 and 8 at approximately the same distance from the respective ends thereof.

The screw 3 is actuated by the crank 10 which slidably engages the hexagon collar 27 by a mating recess, and which is freely movable on the smooth end of screw 3. The handle 10 can thus be brought into engagement with screw 3 in any one of six positions offset relative to each other by an angle of 60° or by multiples of 60°. A washer 28 mounted on the free end of screw portion 3a prevents crank 10 from slipping off the screw 3. The length of screw portion 3a between collar 27 and washer 28 is somewhat greater than the width of crank 10.

3

Rotation of screw 3 by means of handle 10 actuates linear movement of movable jaw 1 along guide rods 7 and 8 between a closed position of the vise and contact between jaw facings 14 and the wide open position of the vise. In the embodiment illustrated in FIGS. 1 and 2, the outward travel of jaw 1 is limited by abutment against the upper clamping jaw of a screw clamp tightened about the far ends of guide rods 7 and 8 by clamping screw 20 pressing against the support T (FIGS. 3 and 4) and securing the guide rods to the support. The guide rods are equally fastened to the work table or other support by a screw clamp of identical structure tightened about the rods between jaw 2 and the hexagon shoulder 27.

FIGS. 5 to 7 illustrate three of the numerous arrangements possible with the vise of the invention for clamping work pieces to a work table or other support.

FIG. 5 shows a left-handed arrangement in which the crank end of the drive screw extends beyond the left corner of the work table and can be freely operated by the left hand. The jaws are projecting upward to grasp an object located on or above the work table between faces 1a and 2a and/or between faces 1b and 2b. As indicated by the lines of dashes, the upper surface of the work table is tangentially aligned with the guide rods 7 and 8, so that a work piece projecting over the edge of the table between the jaws 1 and 2 will find additional support on the guide rods.

The arrangement of FIG. 6 is similar to that of FIG. 5, but is right-handed, the crank 10 being arranged to project beyond the right corner of the work table for actuation by the right hand. It will be appreciated that the vise of the invention need not be mounted in such a manner as to have the crank end of the drive screw project over the edge of the table. The vise may be fastened at any convenient edge of a work table surface. Crank 10 will then be limited in its rotation to approximately a 270° angle, but such a limitation will not seriously interfere with the operation of the vise since the crank can be readily slipped off the hexagon collar 27 whereupon it may be returned to its original position for renewed engagement with screw 3.

FIG. 7 illustrates the use of the vise of the invention for holding work pieces which are longer than the effective stroke of drive screw 3. The jaws with the drive screw and guide rods are mounted in two screw clamps in the inverted position, the jaws extending downward from the guide rods. A third screw clamp 24 is fastened to the work table T at a suitable distance from the vise. Two short cylindrical rods 26 are clamped in the recesses 19 of clamp 24 to provide a support for work piece 25 beyond the edge of table T. The other end of work piece 25 rests on the guide rods of the vise and is forced towards clamp 24 by abutment against the outward clamping face 1e of movable jaw 1. In this arrangement, the size of the object to be clamped by the vise is limited only by the length of table T.

In the arrangement of FIG. 7, a screw clamp is arranged between jaws 1 and 2 in order to make outward face 1e available for the clamping of work piece 25. The vise of the invention permits the same arrangement also in the event that the length of the drive screw has to be utilized to the limit in order to accommodate a very large work piece.

As can be seen from FIGS. 5-7, the jaws of the vise of the invention are movable parallel to the edge of a work table or other support to which they are attached. The object to be clamped may thus rest on the support and project beyond the edge thereof by a portion which is to be clamped between the jaws of the vise.

The afore-described examples illustrate the great versatility of the clamp-on vise of the invention but numerous other arrangements will readily present themselves to tradesmen and others skilled in the use of vises. It

4

is obvious that the vise of the invention may be equipped with pipe jaws and other attachments commonly employed with vises and the use of such attachments is specifically considered.

It should be understood, of course, that the foregoing disclosure relates to only a preferred embodiment of the invention and that it is intended to cover all changes and modifications of the example of the invention herein chosen for the purpose of the disclosure which do not constitute departures from the spirit and scope of the invention set forth in the appended claims.

What is claimed is:

1. A clamp-on vise comprising, in combination, two vise members; guide rod means supporting said vise members in such a manner that at least one of said vise members is slidable along said guide rod means; clamping means for releasably fastening said guide rod means to a support, said clamping means including two jaw members pivotally connected to each other intermediate the ends thereof, each of said jaw members has a pair of clamping faces respectively arranged on opposite sides of the pivotal connection of said jaw members, the clamping faces of one jaw member forming with the corresponding clamping faces of the other jaw member co-operating pairs of clamping faces respectively adapted for clamping engagement with said support and said guide rods; and drive means mounted on one of said means and engaging at least one of said vise members for moving the same along said guide rod means toward and away from the other vise member, while said guide rod means is fastened by said clamping means to a support.

2. A clamp-on vise comprising, in combination, two vise members; guide rod means supporting said vise members in such a manner that at least one of said vise members is slidable along said guide rod means; clamping means for releasably fastening said guide rod means to a support, said clamping means including two jaw members pivotally connected to each other intermediate the ends thereof, said jaw members being formed at one of their respective ends with coordinated recesses for clamping engagement with said guide rod means, the other respective ends of said jaw members being provided with adjustable face means for clamping engagement with said support; and drive means mounted on said clamping means and engaging at least one of said vise members for moving the same along said guide rod means toward and away from the other vise member, while said guide rod means is fastened by said clamping means to a support.

3. A clamp-on vise comprising, in combination, two vise members; guide rod means supporting said vise members in such a manner that at least one of said vise members is slidable along said guide rod means; a clamp, including two lever members connected to each other intermediate the ends thereof by a pivot connection, each of said lever members being formed with two arms, said lever members being formed at one of their respective arms with coordinated recesses for clamping engagement with said guide rod means, the other respective arms of said lever members being provided with adjustable face means for clamping engagement with a support, whereby said one arms are tightly clamped about said guide rod means when said face means are adjusted for clamping engagement with said support; and drive means mounted slidably and rotatably in said clamp and engaging at least one of said vise members for moving the same along said guide rod means toward and away from the other vise member, while said guide rod means is fastened by said clamp to said support.

4. A clamp-on vise comprising, in combination, two vise members; guide rod means supporting said vise members in such a manner that at least one of said vise members is slidable along said guide rod means; a clamp, including two lever members connected to each other inter-

mediate the ends thereof by a pivot connection, each of said lever members being formed with two arms, said lever members being formed at one of their respective arms with coordinated recesses for clamping engagement with said guide rod means, the other arm of one of said lever members having an abutting face formed thereon opposite said other jaw member; said clamp further including a clamping screw mounted on the other arm of said other lever member adjustably towards and from said abutting face for clamping engagement of a support between said abutting face and said clamping screw, whereby said one arms are tightly clamped about said guide rod means when said support is clamped between said abutting face and said screw; and drive means mounted slidably and rotatably in said clamp and engaging at least one of said vise members for moving the same along said guide rod means toward and away from the other vise member, while said guide rod means is fastened by said clamp to said support.

5. A clamp-on vise comprising, in combination, two vise members, guide rod means supporting said vise members, said guide rod means being fixedly fastened to one of said members and slidable in the other one of said members; a clamp, including two lever members connected to each other intermediate the ends thereof by a pivot connection, each of said lever members being formed with two arms, said lever members being formed at one of their respective arms with coordinated recesses for clamping engagement with said guide rod means, the other arm of one of said lever members having an abutting face formed thereon opposite said other lever member; said clamp further including a clamping screw mounted on the other arm of said other lever member adjustably toward and from said abutting face for clamping engagement of a support between said abutting face and said clamping screw, whereby said one arms are tightly clamped about said guide rod means when said support is clamped between said abutting face and said screw; and a drive screw mounted slidably and rotatably in said clamp parallel to said guide rod means and engaging at least one of said vise members for moving the same along said guide rod means toward and away from the other vise member, while said guide rod means is fastened by said clamp to said support.

6. A clamp for releasably fastening a rod and the like to a support comprising, in combination, two lever members connected to each other intermediate the ends thereof by a pivot connection, each of said lever members being formed with two arms, said lever members being formed at one of their respective arms with coordinated recesses for clamping engagement with said rod, the other arm of one of said lever members having an abutting face formed thereon opposite said other lever member; said clamp further including a clamping screw mounted on the other arm of said other lever member adjustably toward and from said abutting face for clamping engagement of a support between said abutting face and said clamping screw, whereby said one arms are tightly clamped about said rod when said support is clamped between said abutting face and said screw.

7. A clamp for releasably fastening a rod and the like to a support comprising, in combination, two lever members connected to each other intermediate the ends thereof by a pivot connection, each of said lever members being formed with two arms, said lever members being formed at one of their respective arms with coordinated recesses for clamping engagement with said rod, the other arm of one of said lever members having a substantially plane abutting face formed thereon opposite said other lever member, said face being aligned tangentially with one of said recesses in said one arm of said one lever member; said clamp further including a clamping screw mounted on the other arm of said other lever member adjustably toward and from said abutting face for clamp-

ing engagement of a support between said abutting face and said clamping screw, whereby said one arms are tightly clamped about said rod when said support is clamped between said abutting face and said screw.

8. A clamp for releasably fastening a rod to a support comprising, in combination, two lever members connected to each other intermediate the ends thereof by a pivot connection, each of said lever members being formed with two arms, said lever members being formed at one of their respective arms with coordinated recesses for clamping engagement with said rod, the other arm of one of said lever members having an abutting face formed thereon opposite said other lever member; said clamp further including a clamping screw mounted on the other arm of said other lever member adjustably toward and from said abutting face for clamping engagement of a support between said abutting face and said clamping screw, whereby said one ends are tightly clamped about said rod when said support is clamped between said abutting face and said screw and spring means operatively engaging said lever members and tending to hold the recessed arms thereof in engagement with said rod.

9. A clamp-on vise comprising, in combination, two vise members, two parallel guide rods supporting said vise members, said rods being fixedly fastened to one of said members and slidable in the other one of said members; a clamp including two jaw members connected to each other intermediate the ends thereof by a pivot connection, said jaw members being formed at one of their respective ends with coordinated dual recesses for clamping engagement with said guide rods, the other end of said jaw members having a substantially plane abutting face formed thereon opposite said other jaw member, said face being aligned tangentially with said dual recesses in said one end of said one jaw member; said clamp further including a clamping screw mounted on the other end of said other jaw member adjustably toward and from said abutting face for clamping engagement of a support between said abutting face and said clamping screw, whereby said one ends are tightly clamped about said rods when said support is clamped between said abutting face and said screw; and a drive screw mounted slidably and rotatably in said clamp parallel to said guide rods and symmetrically therebetween and engaging at least one of said vise members for moving the same along said guide rod means toward and away from the other vise member, while said guide rods are fastened by said clamp to said support.

10. A clamp-on vise comprising, in combination, a vise unit including elongated guide rod means, two vise members mounted on said guide rod means for movement toward and away from each other, and drive means supported by and operatively connected to said vise members for moving at least one of said vise members toward the other of said vise members; and a pair of clamping means for fixedly clamping said vise unit to a support, each of said clamping means having a pair of cooperating clamping faces adapted for clamping engagement with said guide rod means so that said two clamping means may be clamped along the length of said guide rod means at any desired distance from each other.

11. A clamp-on vise comprising, in combination, a vise unit including two parallel guide rods, two vise members mounted on said guide rods for movement toward and away from each other, and a drive screw parallel to and equally spaced from said guide rods and being supported by and operatively connected to said vise members for moving at least one toward the other of said vise members; and a pair of clamping means for fixedly clamping said vise unit to a support plate, each of said clamping units having a pair of first cooperating clamping faces adapted for clamping engagement with said guide rods and a pair of second cooperating clamping faces adapted

7

for clamping engagement with a support plate so that said two clamping members may be clamped along the length of said guide rods at any desired distance from each other and in two positions respectively reversed through 180° with respect to said guide rods, in one of said positions said pair of second cooperating clamping faces project in transverse direction to one side of said guide rods and in the other of said positions said pair of second cooperating faces project in transverse direction to the other side of said guide rods.

12. A clamp-on vise comprising, in combination, a vise unit including two parallel guide rods, two vise members mounted on said guide rods for movement toward and away from each other, and a drive screw parallel to and equally spaced from said guide rods and being supported by and operatively connected to said vise members for moving at least one toward the other of said vise members; and a pair of clamping means for fixedly clamping said vise unit to a support plate, each of said clamping units having a pair of first cooperating clamping faces adapted for clamping engagement with said guide rods and a pair of second cooperating clamping faces arranged laterally from said pair of first clamp-

8

ing faces and adapted for clamping engagement with a support plate so that said two clamping members may be clamped along the length of said guide rods at any desired distance from each other and in two positions respectively reversed through 180° with respect to said guide rods, in one of said positions said pair of second cooperating clamping faces project in transverse direction to one side of said guide rods and in the other of said positions said pair of second cooperating faces project in transverse direction to the other side of said guide rods.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

877,306	Dinsmoor	Jan. 21, 1908
1,335,721	Bergstrom	Apr. 6, 1920
1,387,821	Wilkinson	Aug. 16, 1921
1,428,679	Caswell	Sept. 12, 1922
1,890,114	Fulton	Dec. 6, 1932
2,248,170	Hansen	July 8, 1941
2,439,151	Spinnler	Apr. 6, 1948
2,645,962	Zahner	July 21, 1953