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VISE HAVING ADJUSTABLE FACEPIECES

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Fig. 1.

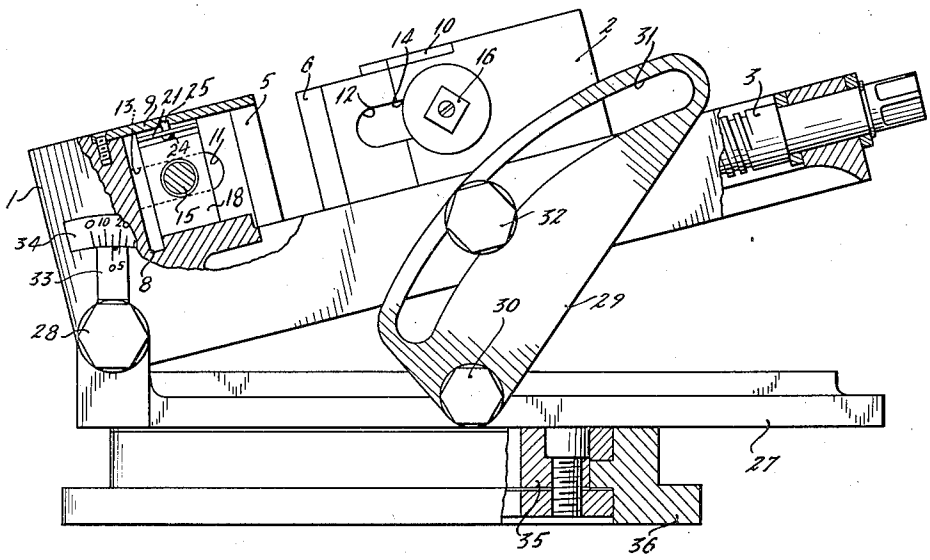
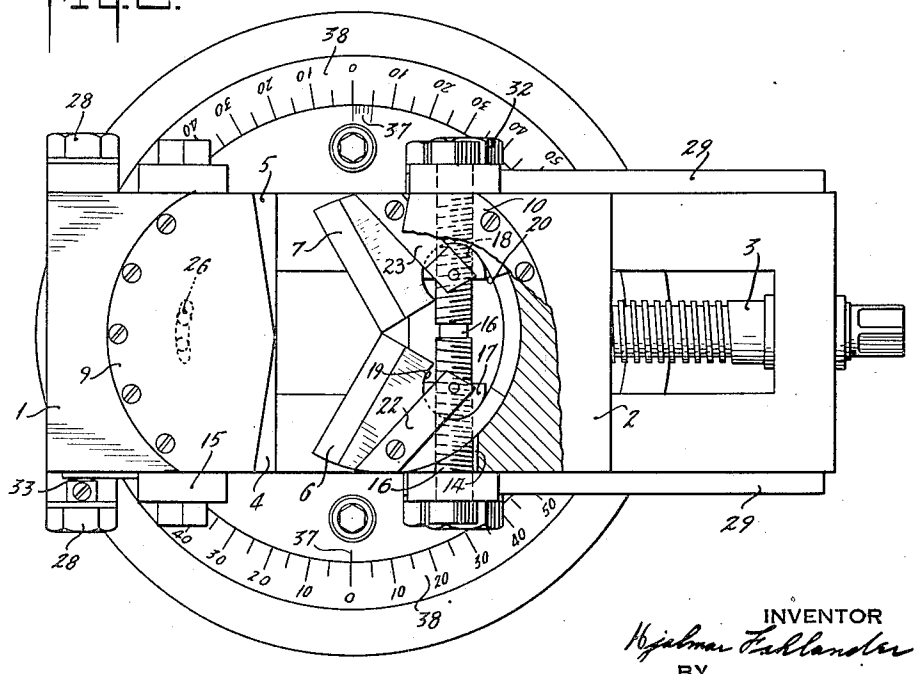


Fig. 2.



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VISE HAVING ADJUSTABLE FACEPIECES

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6 Claims. (Cl. 81—22)

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My present invention relates to gripping devices and particularly to vises or the like having jaws movable relative to each other and at least one of them provided with two or more adjustable face-pieces, resting with a cylindrical outer side surface against a cylindrical wall portion of a socket in the jaw-face opposing the other jaw. The main object of the invention is to provide a vise of a simple and yet solid construction by means of which one will be able readily and firmly to clamp work-pieces of different sizes and shapes in different positions and in which the face-pieces may be firmly set in desired positions in the jaws. In order to achieve said main object a vise according to the invention is characterized by the provision of pressure members, displaceably mounted upon a screw-spindle and causing adjustment of the face-pieces to desired positions.

The invention is illustrated by an embodiment shown as an example in the accompanying drawings.

Figure 1 represents a side view of the vise, partly in section.

Figure 2 represents a top plan view of the vise.

The vise shown in the drawing comprises in the usual manner a stationary jaw 1, a movable jaw 2 and a screw-spindle 3 for effecting the displacement of the latter jaw 2 relative to the former jaw 1. In the opposing faces of the jaws 1, 2 two pairs of face-pieces 4, 5 and 6, 7 are rotatively fitted, each face-piece 4—7 having the shape of a circular quadrant and engaging with its cylindrical outer side cylindrical sockets in the jaws 1, 2. The face-pieces 4—7 are retained in the jaws 1, 2 by means of portions of an annular ring provided on the face-pieces and forming guiding flanges, one of which is shown to the left in Fig. 1 and denoted by 8, and by means of covering plates 9, 10. The face-pieces 4—7 are provided with recesses or grooves 11, 12 in their inner portions and the jaws 1, 2, too, are provided with recesses or grooves 13, 14. In these recesses 11, 13 and 12, 14 respectively screw-spindles 15, 16 are positioned displaceably in their transverse direction. Each screw-spindle carries in screw threaded engagemnt two semi-cylindrical forcing members 17, 18, which with their cylindrical surfaces engage cylindrical sockets 19, 20, each socket being somewhat deeper than the radius of the forcing members. To each face-piece there is further secured a plate spring 21, 22, 23, which by means of a hemi-spherical pivot 24 is arranged to engage a forcing member and by means of a cylindrical pin 25 rests against

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the adjacent covering plate 9 or 10. In the centres of the covering plates there are notches 26, in which the pins 25 of the spring plates can be received.

By means of the embodiment described it is possible by turning the screw-spindles 15, 16 to move the forcing members mounted upon the respective screw-spindles so that the face-pieces 4—7 are adjusted to desired positions relative to each other in order to obtain a good grip upon the work-piece. The jaw 2 is then as usual moved by means of the screw-spindle 3 for the clamping action. When the face-pieces are to be brought back in the position where they make contact with each other within their respective jaws, the corresponding screw-spindles are turned so that the forcing members are moved towards each other and as then the pins 25 rest against the covering plate 9 or 10 and the hemi-spherical pivots 24 engage the forcing members they will draw the face-pieces with themselves through the intermediacy of the spring plates. When the pins 25 have reached their notches 26, the pivots are able to disengage the forcing members so that the latter may be brought tight together.

For adjustment to different angular positions the vise is supported on a foot plate 27 in such a manner that the vise is connected with the foot plate 27 at one end by means of pins 28 and at the other end by means of a pair of swingably mounted links 29. Each link 29 is at one end journaled on a pin 30 in the base plate 27 and is of such a segmental shape that it can contain a curved slot 31, in which a locking screw 32 threaded in the vise can slide. The slot 31 has such a shape that the link from a vertical limiting position is lowerable in a direction away from the jaw opening of the vise without any part reaching below the lower side of the foot plate 27, and thus movement of the link is not interfered with by the work-bench or the like supporting the vise. Due to this adjustability in height of the vise it thus is possible to adjust the face-pieces 4—7 in a still higher degree for the most suitable grip on the work-piece. By means of pointer 33 on the foot plate and a scale 34 arranged on the vise it is possible to read the angular position in question.

The foot plate in its turn is secured to a turning-plate 35, rotatably mounted on the base plate 36. The turning-plate is provided with a pair of marks 37 and the base plate with a pair of scales 38 graduated in degrees for reading the angular positions.

Although for the sake of simplicity, it has been

deemed convenient in the preceding description to describe an embodiment of a vise in which various parts have been made according to the general inventive idea of the present invention, it will nevertheless be understood that the invention is not limited to such a combination but that it also comprises every vise with only one or some of those parts made as has been described. When speaking of a vise, it will also be understood that by that it is meant every device having a pair of jaws or similar means for clamping work-pieces, as for instance in fixtures or tool holders, which may be placed on a work-bench or in an engine tool.

While the various details of the invention have been described and shown in the drawings, as at present they preferably are considered to be executed, it will be obvious to those skilled in the art that these may be modified in many respects without departing from the scope of the invention. For instance, the face-pieces belonging to one jaw may together occupy more or less than a semicircle in cross-section but preferably yet so that their sides opposing the other jaw are substantially in the same plane, when they make contact with each other with their inner sides. There may be only two face-pieces in one of the jaws and only one face-piece of semicircular cross-section in the other jaw. Furthermore, only one of the jaws may be provided with forcedly adjustable face-pieces.

What is claimed is:

1. A vise having jaws movable relative to each other and provided with opposing sockets having cylindrically curved walls, each jaw being provided with a pair of movable face-pieces and each face-piece having a cylindrically curved outer side surface in sliding engagement with a cylindrical wall portion of a socket, whereby to be adjustable around differently shaped work-pieces by sliding in the socket, a screw spindle extending transversely through each jaw and mounted for displacement in the direction of relative movement of the jaws, forcing members displaceably mounted on said spindles, said face-pieces having sockets provided with cylindrically curved walls and said forcing members being of substantially semi-cylindrical form, each of said members engaging the cylindrical wall of a face-piece to effect adjustment of the latter to desired position upon rotation of said spindle.

2. In a vise, a plurality of jaws, means for moving said jaws relative to each other, each jaw being provided with a semi-cylindrical socket, a pair of face-pieces located in each socket and having a work-gripping surface on one side and a cylindrical surface on the other side in sliding contact with the cylindrical surface of the socket, a threaded spindle rotatably mounted in each jaw, and members carried by said spindles and bearing against said face-pieces for displacing the latter within said sockets upon rotation of said spindle to thereby change the angle between the work-gripping surfaces of each pair of face-pieces.

3. In a vise, a plurality of jaws, means for moving said jaws relative to each other, each jaw being provided with a semi-cylindrical socket open at the top and having a generally flat bottom formed with an annular recess, a pair of face-pieces located in each socket and having a work-gripping surface on one side and a cylindrical surface on the other side in sliding contact with the cylindrical surface of the socket, each piece having an annular flange disposed in said annular recess, a threaded spindle rotatably mounted in each jaw, members carried by said spindle and bearing against said face-pieces for displacing the latter within said sockets upon rotation of said spindle to thereby change the angle between the work-gripping surfaces of each pair of face-pieces, and a plate secured to each jaw and overlying the upper end of the recess therein.

4. In a vise, a plurality of jaws, means for moving said jaws relative to each other, each jaw being provided with a semi-cylindrical socket open at the top and having a generally flat bottom formed with an annular recess, a pair of face-pieces located in each socket and having a work-gripping surface on one side and a cylindrical surface on the other side in sliding contact with the cylindrical surface of the socket, each piece having an annular flange disposed in said annular recess, a threaded spindle rotatably mounted in each jaw, members carried by said spindle and bearing against said face-pieces for displacing the latter within said sockets upon rotation of said spindle to thereby change the angle between the work-gripping surfaces of each pair of face-pieces, a plate secured to each jaw and overlying the upper end of the recess therein, and a plate spring connected between each of said members and the face-piece against which it bears.

5. In a vise, a plurality of jaws, means for moving said jaws relative to each other, each jaw being provided with a semi-cylindrical socket open at the top and having a generally flat bottom formed with an annular recess, a pair of face-pieces located in each socket and having a work-gripping surface on one side and a cylindrical surface on the other side in sliding contact with the cylindrical surface of the socket, each piece having an annular flange disposed in said annular recess, a threaded spindle rotatably mounted in each jaw, members carried by said spindle and bearing against said face-pieces for displacing the latter within said sockets upon rotation of said spindle to thereby change the angle between the work-gripping surfaces of each pair of face-pieces, a plate secured to each jaw and overlying the upper end of the recess therein, a plate spring secured at one end to each of said face-pieces, and a hemispherical projection on the other end of each spring engaging a recess in the cooperating member.

6. In a vise, a plurality of jaws, means for moving said jaws relative to each other, each jaw being provided with a semi-cylindrical socket open at the top and having a generally flat bottom formed with an annular recess, a pair of face-pieces located in each socket and having a work-gripping surface on one side and a cylindrical surface on the other side in sliding contact with the cylindrical surface of the socket, each piece having an annular flange disposed in said annular recess, a threaded spindle rotatably mounted in each jaw, members carried by said spindle and bearing against said face-pieces for displacing the latter within said sockets upon rotation of said spindle to thereby change the angle between the work-gripping surfaces of each pair of face-pieces, a plate secured to each jaw and overlying the upper end of the recess therein, a plate spring secured at one end to each of said face-pieces, a hemispherical projection on one side of each spring engaging a recess in the cooperating member, and a cylindrical projection on the other side of each spring engageable with a recess in said cover plate.

HJALMAR FAHLANDER.

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