

No. 709,399.

J. F. EMMERT.

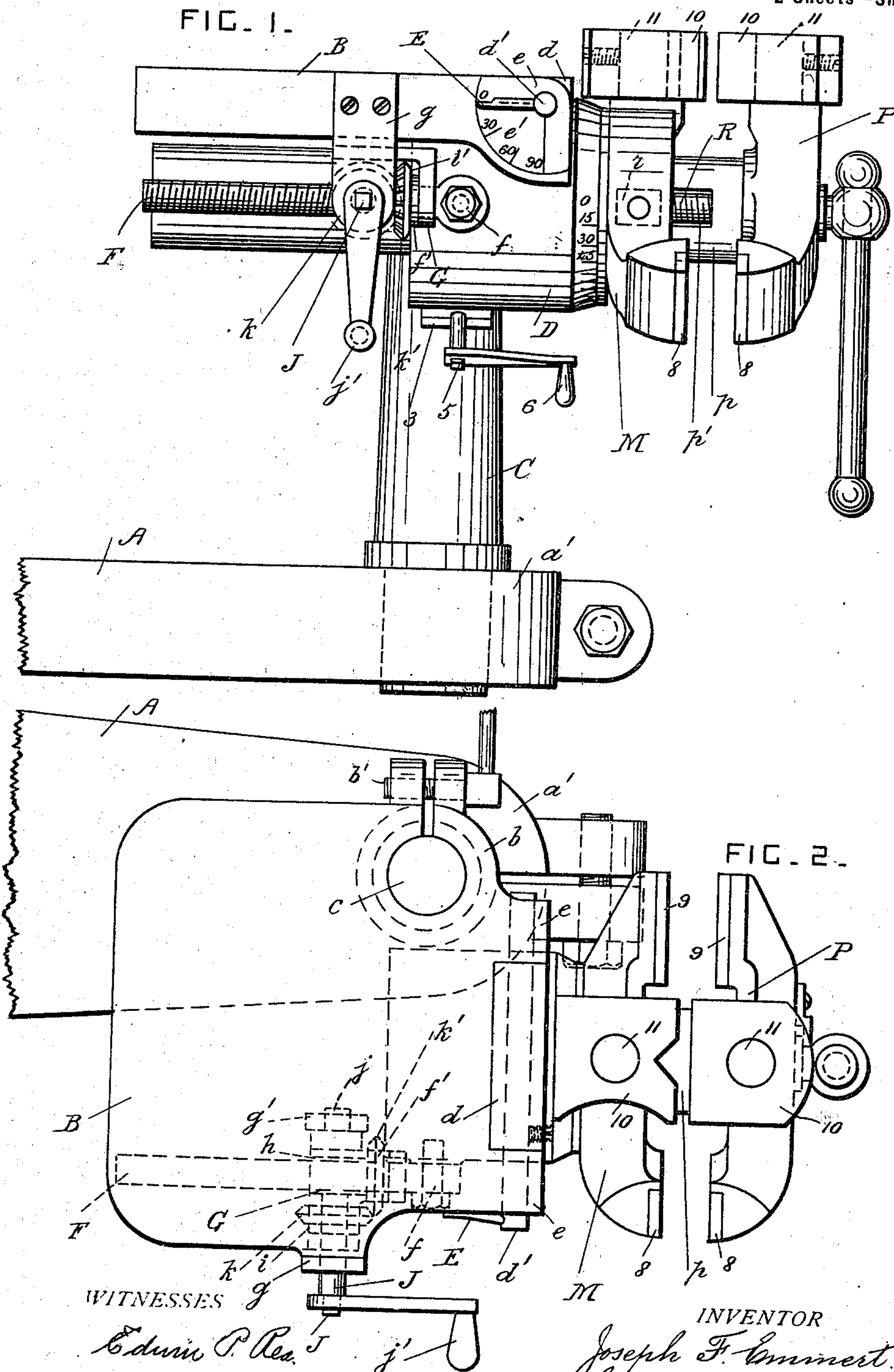
Patented Sept. 16, 1902.

WISE.

(Application filed Jan. 7, 1902.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES

Edwin P. Rees, Jr.
Walter Allen

INVENTOR

Joseph F. Emmert.
Herbert W. Jenner.
Attorney

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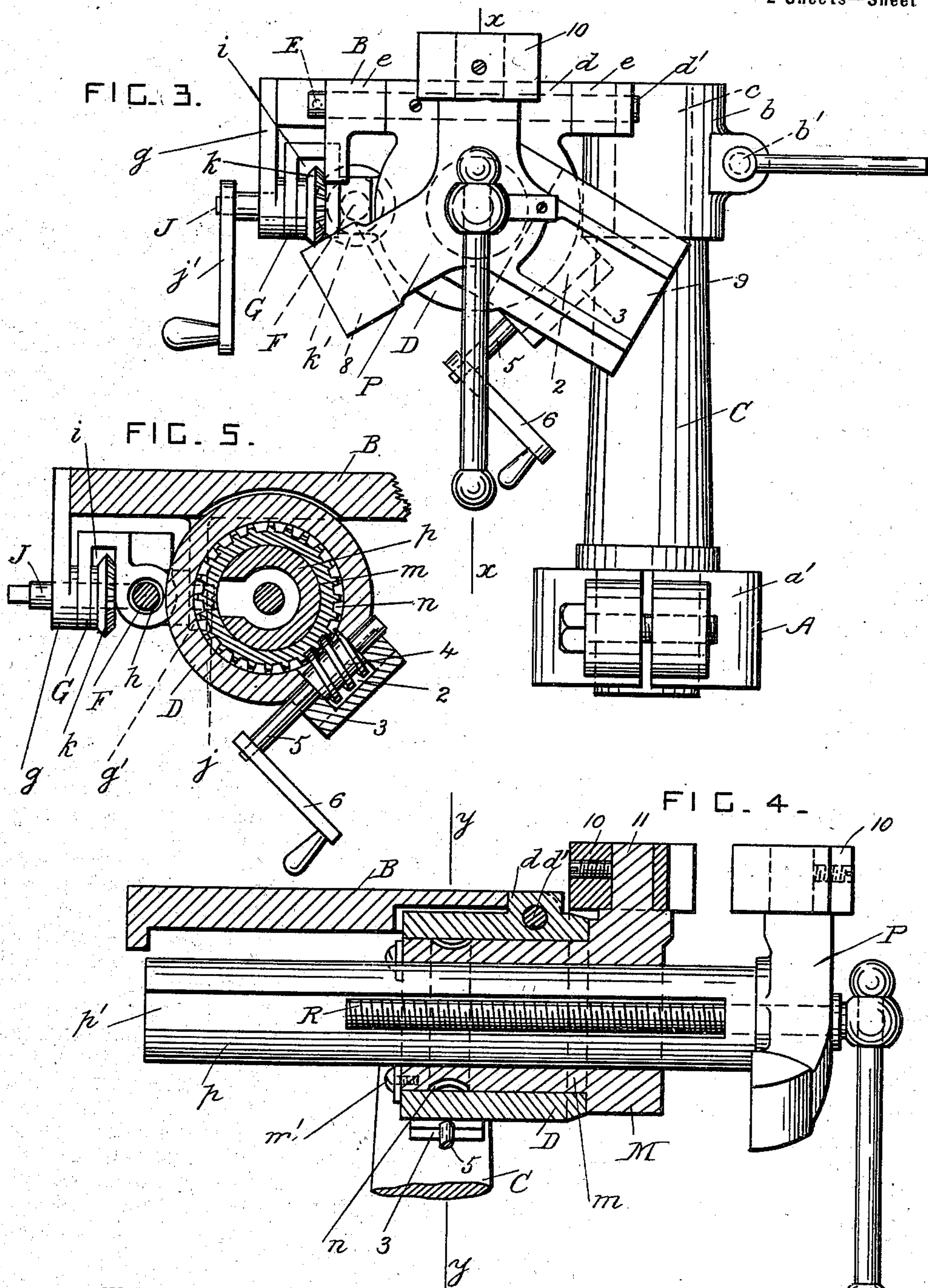
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Edwin P. Rea.
Walter Allen

INVENTOR

Joseph F. Emmert,
by Herbert W. Jenner.
Attorney

UNITED STATES PATENT OFFICE.

JOSEPH F. EMMERT, OF WAYNESBORO, PENNSYLVANIA, ASSIGNOR TO
EMMERT MANUFACTURING COMPANY, OF WAYNESBORO, PENNSYLVANIA.

WISE.

SPECIFICATION forming part of Letters Patent No. 709,399, dated September 16, 1902.

Application filed January 7, 1902. Serial No. 88,710. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH F. EMMERT, a citizen of the United States, residing at Waynesboro, in the county of Franklin and State of Pennsylvania, have invented certain new and useful Improvements in Vises; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to vises; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a side view of the vise. Fig. 2 is a plan view of the vise. Fig. 3 is a front view of the vise. Fig. 4 is a longitudinal section taken on the line $x x$ in Fig. 3. Fig. 5 is a cross-section taken on the line $y y$ in Fig. 4.

A is a base which supports the vise. This base may be any approved stationary support; but in the present instance the base or support is preferably the arm which supports the work-table of a drilling-machine, the work-table being removed and the vise substituted for it, so that the work may be held by the vise under the drill of the drilling-machine.

B is the table or frame of the vise, which is provided with a downwardly-projecting pillar or post C at one corner, which is pivoted in the socket a' of the arm or base A and secured there by the usual clamping-screw. The post C may be formed integral with the table B or it may be rigidly secured to it, but the post C is preferably provided with a bearing c at its upper end, and the table B is preferably provided with a socket b , which is journaled on the bearing. The bearing-socket b is split upon one side, and b' is a clamping-screw for securing the table after it has been swiveled around in a horizontal plane to the required position. When the post is rigidly connected to the table, the lower end of the post is turned in the socket of the arm A and clamped therein after being adjusted.

D is a cylindrical bearing provided with a flange d on its upper side and a pivot-pin d' . The pivot-pin is secured to the flange and is

pivoted in lugs e at the front edge of the table. The flange is arranged between the two lugs, and E is a pointer secured on the projecting end portion of the pivot-pin adjacent to a graduated scale e' , marked on or secured to the exterior surface of one of the said lugs and indicating the inclination of the axis of the cylindrical bearing D. The axis of the bearing D is normally horizontal, but it may be set at any angle from zero to ninety degrees by means of a screw F, which is pivoted to one side of the bearing by a pin f . This screw is operated by means of a revolvable nut f' , which is supported from the table B.

Two brackets $g g'$ project downwardly from the under side of the table B, the outer bracket g being removable.

G is a guide-frame which is pivoted between the lugs $g g'$ under the table and which is provided with a hole h for the passage of the screw F. The guide-frame G has two slots i and i' , and j is a pivot on one side of the frame, which engages with a hole in the bracket g' . A short shaft J is journaled in the bracket g and in the frame G axially in line with the pivot j , so that the frame is pivoted between the two brackets g and g' . A beveled toothed wheel k is secured on the shaft J in the slot i of the guide-frame and gears into a beveled toothed wheel k' , formed on or secured to the nut f' , which is arranged in the slot i' of the guide-frame. The shaft J is provided with a crank-handle j' or other equivalent means for revolving it. When the handle j' is turned by hand, the nut is revolved by the beveled toothed wheels, and the screw is moved longitudinally to vary and adjust the angle of the bearing D.

M is the inner vise-jaw, which is provided with a sleeve m , which is journaled in the bearing D, and m' represents screws in the end of the sleeve, the heads of which prevent the sleeve from sliding longitudinally in the bearing. Worm-wheel teeth n are formed in the periphery of the sleeve m near the rear end of the bearing. The bearing D has a chamber 2 formed in it opposite the worm-wheel teeth of the sleeve, and 3 is a cover plate or cap for the chamber 2, secured to it by cap-screws. A worm 4 is mounted on a shaft 5

and engages with the worm-wheel teeth, the shaft 5 being journaled in the ends of the chamber and held in position by the cap. The shaft 5 is provided with a small crank-handle 6 or other approved means for revolving it, and thereby revolving the inner vise-jaw. The bearing D has a graduated scale, and the inner jaw has a mark for setting the vise-jaws.

10 P is the outer vise-jaw, provided with a hollow bar *p*, having a longitudinal slot *p'* in one side of it. The bar *p* is slidable longitudinally in the sleeve *m* of the inner vise-jaw.

15 R is the usual vise-screw, which is journaled in the outer vise-jaw on the axis of the bar *p* and which engages with a nut *r*, secured to the inner vise-jaw and projecting through the slot *p'*.

20 The two vise-jaws M and P have a plurality of gripping devices for engaging with the work, according to the nature of it, and these gripping devices are arranged in a series around the jaws, as shown, and after the manner of turret-vises. One pair of gripping devices has cheeks 8 of hardened steel, and another pair has cheeks 9 of soft leather. Another pair of gripping devices consists of blocks 10, which are secured upon radial projections 11 on the vise-jaws. These blocks 30 10 have various curves and indentations on their sides, and they can be turned around upon the projections 11 and secured to them, so as to hold a great variety of objects of irregular shape. The various gripping devices 35 of the turret vise-jaws are brought into action by turning the vise-jaws on their axis by means of the worm and worm-wheel teeth. The vise and its table are moved and adjusted as required and are so arranged as to have a 40 practically universal adjustment.

What I claim is—

1. In a vise, the combination, with a supporting-base, of a flat vise-table pivoted to the base and movable in a horizontal plane, 45 a bearing hinged to one edge of the said vise-table, and vise-jaws carried by the said bearing, substantially as set forth.

2. In a vise, the combination, with a supporting arm or base provided with a socket, 50 of a flat vise-table provided with a downwardly-projecting pivot pillar or post which engages with the said socket, a bearing hinged to one edge of the said vise-table, and vise-jaws carried by the said bearing, substantially as set forth. 55

3. In a vise, the combination, with a supporting-base, and a flat vise-table arranged above it; of a vertical pillar or post interposed between the said base and vise-table 60 and pivotally connecting them, a bearing hinged to one edge of the said vise-table, and vise-jaws carried by the said bearing, substantially as set forth.

4. In a vise, the combination, with a supporting-base, and a pillar projecting from it; 65 of a flat vise-table provided with a contractible bearing which is pivoted on the said pil-

lar, a bearing hinged to one edge of the said vise-table, and vise-jaws carried by the said bearing, substantially as set forth. 70

5. In a vise, the combination, with a flat vise-table, of a bearing arranged under and hinged to one edge of the said table, and vise-jaws carried by the said bearing, substantially as set forth. 75

6. In a vise, the combination, with a flat vise-table provided with a graduated scale, of a bearing arranged under and hinged to one edge of the said table, a hinge-pin secured to the said bearing and movable in the 80 said table, a pointer secured to the said pin adjacent to the said scale, and vise-jaws carried by the said bearing, substantially as set forth.

7. In a vise, the combination, with a vise-table, a bearing pivoted to the table and movable in a vertical plane, and vise-jaws carried by the said bearing; of a screw pivoted to the said bearing, a revoluble nut supported from the said table and engaging with the 90 said screw, and means for revolving the said nut, substantially as set forth.

8. In a vise, the combination, with a vise-table, a bearing pivoted to the table, and vise-jaws carried by the said bearing; of a screw 95 pivoted to the said bearing, a revoluble nut for engaging said screw supported from the said table and carrying a beveled toothed wheel, a beveled toothed wheel also supported from the said table and gearing into the said wheel, 100 and means for revolving the said wheels, substantially as set forth.

9. In a vise, the combination, with a vise-table having two brackets, a bearing pivoted to the said table, and vise-jaws carried by 105 the said bearing; of a screw pivoted to the bearing, a frame pivoted between the said brackets and provided with two slots, a nut for engaging the said screw arranged in one of the said slots and carrying a beveled 110 toothed wheel, an operating-shaft which forms one of the pivots for the said frame, and a beveled toothed wheel arranged in the other said slot in gear with the said aforesaid wheel and secured upon the said operating- 115 shaft, substantially as set forth.

10. In a vise, the combination, with a supporting-bearing, of an inner vise-jaw provided with a sleeve having worm-wheel teeth on it and journaled in the said bearing, means 120 for preventing the sleeve from sliding longitudinally, a revoluble worm supported from the said bearing in gear with the worm-wheel teeth, and an outer vise-jaw which is slidable longitudinally of the said sleeve, sub- 125 stantially as set forth.

11. In a vise, the combination, with a supporting-bearing having a worm-chamber on one side, of a revoluble worm provided with an operating-shaft which is journaled in the 130 ends of the said chamber, a cap which closes the worm-chamber and holds the worm-shaft in place, an inner vise-jaw provided with a sleeve which is journaled in the said bear-

ing and provided with worm-wheel teeth which engage with the said worm, and an outer vise-jaw which is slidable longitudinally of the said sleeve, substantially as set forth.

12. In a vise, the combination, with an inner vise-jaw, and a slidable outer vise-jaw, said jaws being provided with projections arranged opposite to and parallel with each other, of removable blocks having a plurality of gripping-faces on their side portions

and mounted on the said projections so that they may be turned around to grip the work between their various faces, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH F. EMMERT.

Witnesses:

ALF. N. RUSSELL,
R. R. RUSSELL.