J. HAMMANN.

MACHINE VISE.

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1,060,980.

Patented May 6, 1913.

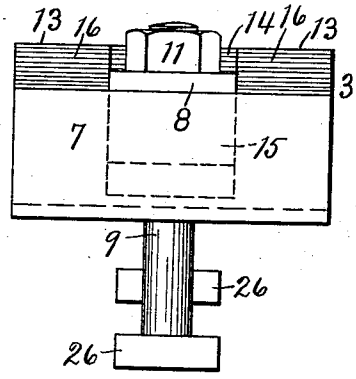

FIG. 1.

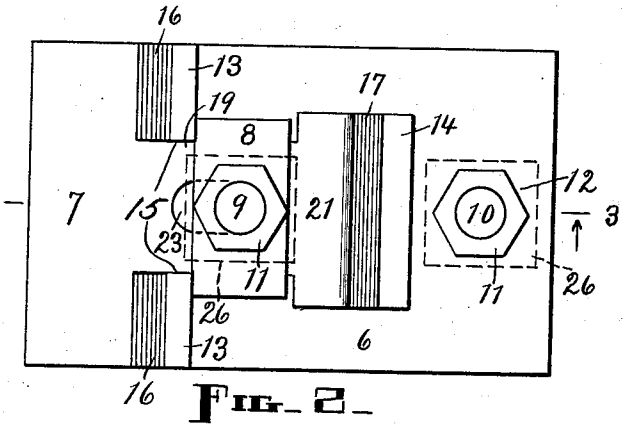

FIG. 2.

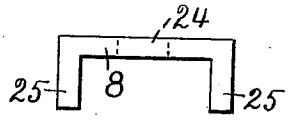

FIG. 5.

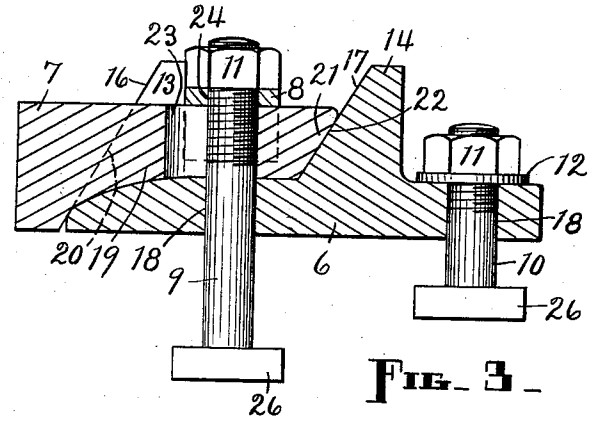

FIG. 3.

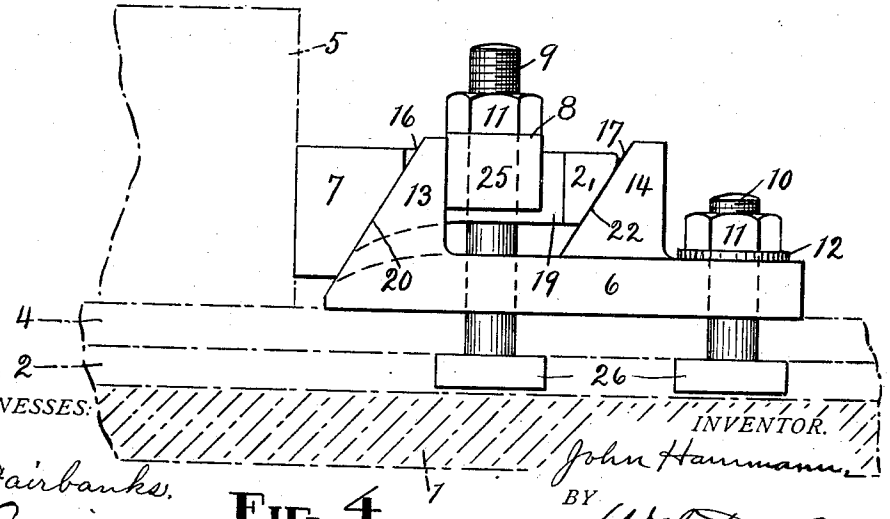

FIG. 4.

WITNESSES:

A. C. Fairbanks.

J. A. Angier.

INVENTOR.

John Hammann.

BY

Webster & Co.,

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN HAMMANN, OF NORTHAMPTON, MASSACHUSETTS.

MACHINE-VISE.

1,060,980. Specification of Letters Patent. Patented May 6, 1913.

Application filed March 21, 1912. Serial No. 685,184.

To all whom it may concern:

Be it known that I, JOHN HAMMANN, a citizen of the United States of America, residing at Northampton, in the county of Hampshire and State of Massachusetts, have invented a new and useful Machine-Vise, of which the following is a specification.

My invention relates to improvements in vises for use in connection with planers, drill presses, milling machines, boring mills, lathes, and the like, and consists of a block or holder of peculiar construction designed to be secured to the bed or other supporting part of the machine with which the vise is employed, and a certain peculiar adjustable jaw mounted with its members on and in such holder, together with such clamping members as may be needed to clamp the vise to the machine and the jaw to the holder, all as hereinafter set forth.

The object of my invention is to provide a strong, durable, simple, inexpensive and easily adjustable device, of the class designated above, which can be readily clamped in position on a machine bed or other supporting part and when thus made fast is capable of securely holding on said bed or support the work-piece being operated upon. I attain this and other objects which will appear in the course of the following description by the means illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of a vise which embodies a practical form of my invention; Fig. 2, a top plan of said vise; Fig. 3, a central longitudinal vertical section through said vise, taken on lines 3—3, looking in the direction of the associated arrow, in Fig. 2; Fig. 4, a side elevation of the vise illustrating the application or operation of the same, and, Fig. 5, a front (or rear) elevation of the saddle.

Similar figures refer to similar parts throughout the several views.

In the first three views the jaw is shown fully depressed in its inoperative position, while in Fig. 4 said jaw is represented in an elevated and operative position.

Usually this vise is employed with a companion vise, the work-piece being clamped between them, but said vise in some cases is used alone, some suitable abutment on the machine to which said vise is attached serving to support the work-piece on the side opposite that to which the vise jaw is applied. The vise is most frequently arranged in parallel relation to the bed or support, as represented in Fig. 4 wherein a fragment of such a bed is shown at 1, such bed having a longitudinal undercut groove 2 therein with a longitudinal flange 4 forming the top of such groove, all being indicated by dot-and-dash lines, as is also a fragment of a work-piece 5 on said bed. In some cases, however, the vise is placed for use in a transverse position relative to the machine bed, as will be more fully explained hereinafter.

The vise comprises a block or holder 6, and a jaw 7 movable and adjustable relative to said holder. In addition to these members I prefer to employ a saddle 8 in connection with the jaw 7, anchor bolts 9 and 10, the former for both jaw and holder and the latter for the holder alone, nuts 11 on said bolts, and a washer 12 on the bolt 10. The holder 6 has a pair of lugs 13 at its front terminal and a rear lug 14 located about in the center of that portion of said holder or of the base thereof that is behind said lugs 13. The lugs 13 are separated from each other so as to leave a space or opening 15, and the front faces of said lugs slant upwardly and rearwardly as represented at 16. The lug 14 also has an inclined front face 17 to correspond with the faces 16. The back face or sides of the lugs 13 are preferably vertical. A vertical hole 18 is made in the holder 6 between the front and back lugs to receive the bolt 9, and a similar hole is made in said holder behind the lug 14 to receive the bolt 10.

The jaw 7 extends across the front of the holder 6, and has a rearwardly-extending central shank 19 which fits between the lugs 13 and operates up and down and back and forth in and through the space 15. The front face of the jaw 7 is usually perpendicular, while said jaw in the rear on each side of the shank 19 is undercut on a bevel that corresponds to that of the faces 16 with which latter such undercut parts contact and upon which said parts slide. The aforesaid undercut parts or faces appear at 20. At the back end of the shank 19 is a cross-head 21 which has its back side or face undercut on a bevel that corresponds to that of the face 17 with which latter such undercut part contacts and upon which it slides. The last-mentioned undercut part or face appears at 22. The cross-head 21 at the back end of the shank 19 is smaller than the cross-head at the front end of said

shank, which in reality the jaw proper constitutes. As intimated the members are so proportioned that the inclined faces 21 and 22 respectively ride and bear on at all times the inclined faces 16 and 17, so that the jaw 7 with the cross-head 21 is always in engagement with the lugs 13 and 14, and any downward movement of said jaw must force the same forward. The shank 19 has a central vertical slot 23 therein for the bolt 9.

The saddle 8 is a flat plate perforated in the center at 24 to accommodate the bolt 9 and having turned-down end pieces 25—25. The saddle is designed to be placed on and over the shank 19 to receive the thrust of the nut 11 on the terminal of the bolt 9 that extends above said saddle after passing upward through the hole 18, the slot 23 and the hole 24. Rigidity and stability are added to the structure by the saddle 8, inasmuch as said saddle is situated with its front edge or edges against the back sides of the lugs 13, and embraces with its end pieces 25 the shank 19.

The washer 12 is interposed between that part of the holder 6 that is behind the lug 14 and the nut 11 on the bolt 10.

In the present case each of the bolts 9 and 10 has at the lower end a square head 26 that is adapted to fit the machine bed groove 2, or the inverted-T-shaped slot of which said groove 2 is a part.

In practice, while the parts are disposed substantially as shown in Figs. 1, 2 and 3, the bolts 9 and 10 are slipped into the aforesaid inverted-T-shaped slot in the machine bed 1, see Fig. 4, with the bolt heads 26 in the grooves one of which appears at 2, and when the vise is located at the desired point the nut 11 on said bolt 10 is screwed down tight on to the washer 12 and the latter is thereby forced hard against the top of the holder 6. Meanwhile the jaw 7 with the shank 19 and cross-head 21 is raised from the front of the holder 6 and its front jaw or nose brought into contact with the work-piece 5. In being thus raised the jaw 7 is moved rearwardly, motion in both directions horizontally being permitted by the slot 23, and the shank 19 carries upwardly with it the saddle 8, but the saddle has no horizontal movement because it fits the bolt 9 without there being any provision for lost motion except longitudinally on said bolt. Next the nut 11 on the bolt 9 is screwed down and forces ahead of it the saddle 8 which in turn carries down the shank 19 with the other jaw members. As the jaw members are forced downward in this manner and by this means they are also forced forward through the medium of the contacting inclined faces, the shank 19 sliding in that direction beneath the descending saddle, and the jaw is actuated against the contiguous side of the work-piece 5 with great force by the time the nut 11 on the bolt 9 is screwed down as far as possible. Besides securing the jaw 7 in operative relation to or engagement with the work-piece, the bolt 9 with its head 21 and nut 11 and the intervening parts materially assists the other clamping members which comprise the bolt 10 in holding the vise rigidly, firmly and securely to the bed 1. To release the work-piece 5 simply loosen the nut on the bolt 9. The manner in which the vise, is removed from the bed 1 will be clearly understood from the foregoing explanation. Upon removing the nut 11 and the washer 12 from the bolt 10 and taking said bolt from the holder 6, the vise can be placed crosswise of the machine bed, only the remaining bolt and nut being then employed to clamp the vise to the bed.

The range of the vise jaw is quite wide in the present construction, and on this account is sufficient for all ordinary purposes.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in a machine vise, with a holder having front and rear lugs the front faces of which are inclined in the same direction, of integral jaw members having inclined faces to bear against and ride on said first-mentioned inclined faces, and means to force said jaw members downwardly.

2. The combination, in a machine vise, with a holder having front and rear lugs the front faces of which are inclined in the same direction, of integral jaw members having inclined faces to bear against and ride on said first-mentioned inclined faces, and clamping means for said holder and jaw members, whereby the latter are forced downwardly and the parts secured to a machine bed or support.

3. The combination, in a machine vise, with a holder having front and rear lugs the front faces of which are inclined, of a jaw having a slotted shank mounted on said inclined faces, an anchor bolt passing through said holder and the slot in said shank, and a nut on said bolt above said shank.

4. The combination, in a machine vise, with a holder having front and rear lugs the front faces of which are inclined, of a jaw having a slotted shank mounted on said inclined face, a saddle on said shank, an anchor bolt passing through said holder, the slot in said shank and said saddle, and a nut on said bolt above said saddle.

5. The combination, in a machine vise, with a holder having front and rear lugs the front faces of which are inclined in the same direction, said front lugs being arranged with a space between them, of a jaw having a shank mounted on said inclined faces, said shank

operating in said space, and means to force said jaw members downwardly.

6. The combination, in a machine vise, with a holder having front and rear lugs the front faces of which are inclined, said front lugs being arranged with a space between them, of a jaw having a slotted shank mounted on said inclined face, an anchor bolt passing through said holder and the slot in said shank, a saddle mounted on said shank and bolt behind said lugs, and a nut on said bolt above said saddle.

JOHN HAMMANN.

Witnesses:
FRANK H. HEIDEN,
WILLIAM H. REECE.