P. BROADBOOKS.

QUICK ACTION BENCH VISE.

APPLICATION FILED JULY 5, 1918.

1,281,499. Patented Oct. 15, 1918.

Fig. 1.

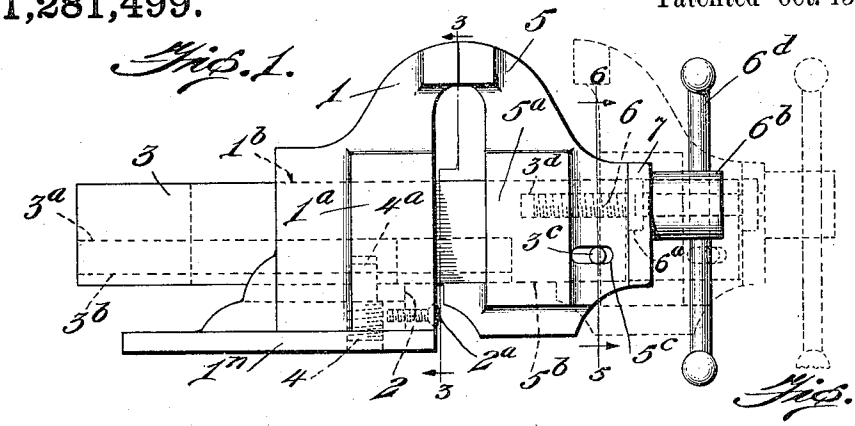


Fig. 3.

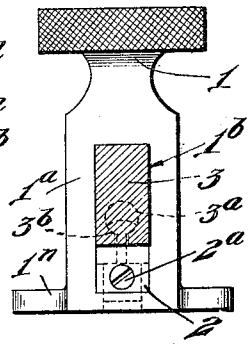


Fig. 2.

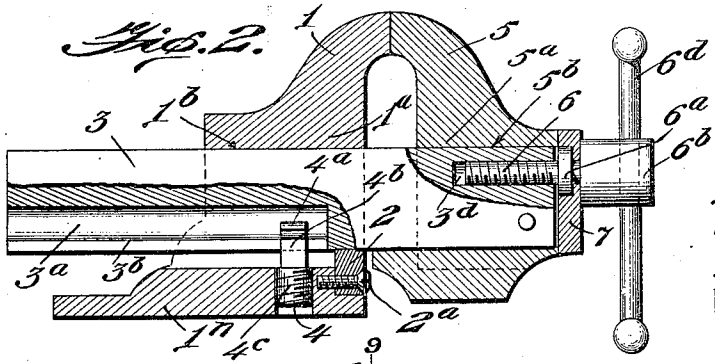


Fig. 4.

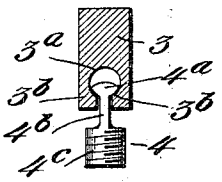


Fig. 8.

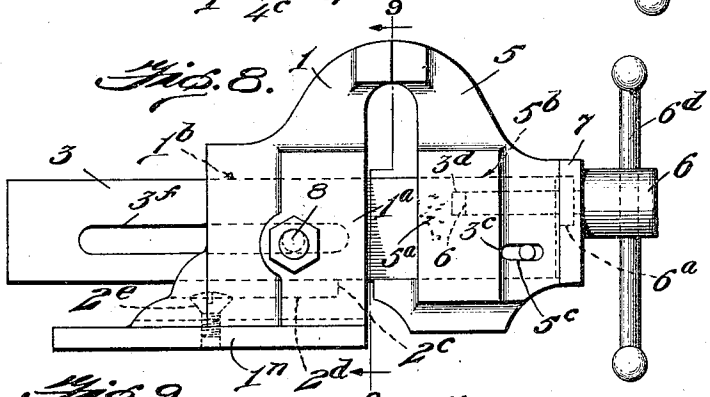


Fig. 6.

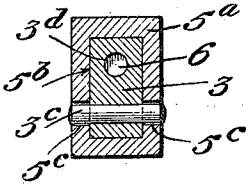


Fig. 9.

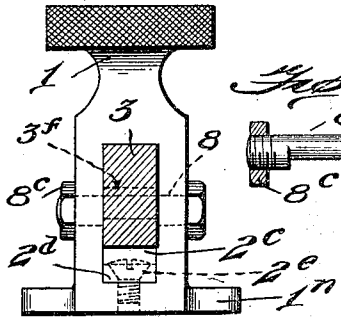


Fig. 7.

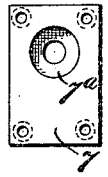


Fig. 10.

Fig. 5.



Inventor

Peter Broadbooks

By Alexander Powell

Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

PETER BROADBOOKS, OF BATAVIA, NEW YORK.

QUICK-ACTION BENCH-VISE.

1,281,499. Specification of Letters Patent. Patented Oct. 15, 1918.

Application filed July 5, 1918. Serial No. 243,375.

To all whom it may concern:

Be it known that I, PETER BROADBOOKS, a citizen of the United States, residing at Batavia, in the county of Genesee and State of New York, have invented certain new and useful Improvements in Quick-Action Bench-Vises; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention relates to so-called quick-action bench vises, in which the movable jaw may be quickly adjusted relatively to the fixed jaw until they are separated to an extent approximately equal to the thickness or width of the object to be gripped thereby, and then the movable jaw may be screw-adjusted to positively engage and clamp such object. Such vises usually have a fixed or stationary jaw attached to the bench or support for the vise; a bar slidably engaging said fixed jaw, and a so-called movable jaw attached to the slidable bar.

One object of my present invention is to provide the sliding bar of such a vise with a channel or slideway engaged by a relatively fixed clutch member which is preferably adjustably connected with the fixed jaw. This enables the sliding bar, with the front or movable jaw thereon, to be moved quickly back or forth relatively to the fixed jaw in clamping and unclamping work; and when said movable jaw is unclamped from the work it may be readily slid, with the bar, to and from the fixed jaw the length of the slideway in the bar, without manipulating the screw.

Another object of the present invention is to provide novel and simple means for clutching the sliding bar and holding it securely against longitudinal play after it is adjusted and the movable jaw is being clamped on the work by the screw.

Another object is to provide the movable jaw with a bearing plate recessed so that the collar of the screw can engage and turn wholly within the recess, and the front jaw bear its full length upon the bar.

Further objects of the invention are to simplyfy the construction and facilitate the adjustment of the parts.

In the accompanying drawings I have illustrated vises embodying the invention and will explain same with reference thereto and summarize the essential features of the invention and novel details of construction for which protection is desired in the claims.

In said drawings:

Figure 1 is a side elevation of a vise made in accordance with my improvements, showing the vise closed in full lines and opened in dotted lines.

Fig. 2 is a longitudinal vertical section through Fig. 1.

Fig. 3 is a vertical section on line 3—3, Fig. 1.

Fig. 4 is a detail sectional view of the sliding bar and clutch member engaged therewith.

Fig. 5 is a bottom view of the clutch member shown in Figs. 1–4.

Fig. 6 is a transverse section on the line 6—6, Fig. 1.

Fig. 7 is a detail inner view face of the wear plate.

Fig. 8 is a side view of a slightly modified form of the vise.

Fig. 9 is a vertical section on the line 9—9, Fig. 8.

Fig. 10 is a detail view of the adjustable eccentric clutch member shown in Figs. 8 and 9.

The vise as shown comprises in general a main or fixed jaw 1; a slidable bar 3 adjustably supported in an opening in the jaw 1; and a front or movable jaw 5 supported upon and movable with bar 3, and also slidable upon this bar.

The rear or fixed jaw 1 is formed with or attached to a shank 1^a preferably formed with or rigidly attached to a base 1^n, which can be fastened in any suitable manner to the support, or bench, upon which the vise is to be mounted.

The shank 1^a has a longitudinal slot 1^b extending through it which slot is preferably rectangular in cross-section, and the upper part of this slot corresponds in width to the thickness of the slidable bar 3 which extends through the slot 1^b as shown in the drawings.

At the bottom of the slot 1^b, and preferably adjacent the front end thereof, is an anvil block or bearing 2 which forms a fulcrum or support for the bar 3; said fulcrum block may be of any suitable kind and formed with the shank or base, or separate, and attached thereto. As shown in Fig. 1 this fulcrum block 2 is preferably composed of a hard metal plate secured by a screw 2^a to the base 1^n. When the fulcrum block is made separate and attached to the jaw, it

can be made of steel and tempered. The said fulcrum block can be made adjustable vertically, in any suitable way, so that it can be raised and the sliding bar adjusted thereby instead of by adjusting the clutch member.

The sliding bar 3 extends through the opening 1^b and may be of any desired length according to the maximum width of objects which the vise is intended to grip. Said bar 3 preferably has a slot or channel 3^a in its lower side forming a slideway extending from its rear end toward the front thereof. Preferably this slideway is approximately T-shaped or dovetailed in cross-section, as shown in Fig. 4, so that the inner portion of the slideway is wider than the lower portion thereof, and the slideway is thus adapted to engage and retain the enlarged head of a clutch member 4.

As shown the clutch member 4 has an enlarged or flanged head 4^a which lies within the enlarged upper portion of the slideway 3^a, and the under side of this head engages the underlying portions or lips 3^b at the opposite sides of the narrow portion of the slideway as shown in Fig. 3. Said head 4^a is connected to a narrow neck portion 4^b which extends through the lower contracted part of the slot 3^a and is connected with the body 4^c of the clutch member that is preferably adjustably secured to the base 1^a of the rear jaw 1 within the opening 1^b and below the slide bar.

The slideway and clutch member may be of any desired relative forms or shapes, and the clutch member may be attached to the jaw in any desired manner; or set in the mold and made integral with the base during the casting thereof. In Figs. 1–5 the body 4^c is threaded and engages a threaded socket in the base 1^a and it may be adjusted vertically by inserting a square ended wrench key into the squared socket 4^e in the lower end of the body.

The shape of the clutch head 4^a may be varied as desired, the object being that such head will engage the underside of the slideway in the bar 3 when the latter is fulcrumed on the plate 2, and the jaw 5 is supported on the outer end of the bar 3; and when an object is gripped between the jaws.

The front jaw 5 is complemental to the jaw 1 and has its shank 5^a formed with a slot 5^b for engagement with the front end of the sliding bar 3, on which jaw 5 is slidably mounted. The movement of the jaw 5 on and relative to the bar 3 may be limited by a stop pin 3^c fast to the sliding bar 3 and engaging slots 5^c in the sides of the shank 5^a of the jaw.

The jaw 5 may be forcibly adjusted on slide bar 3 by any suitable means. As shown in the outer end of the sliding bar 3 is formed a screw threaded socket 3^d into which is tapped a screw 6, which screw has a collar 6^a formed or fastened thereon adjacent the outer end of the sliding bar 3 and said collar is rotatably confined to the shank of jaw 5 by suitable means; preferably by a wear plate 7 fastened to the outer end of the shank 5^a, said wear plate has a recess 7^a in its inner face to receive collar 6^a which is concealed therein.

Screw 6 has an operating head 6^b engaging the outer side of wear plate 7 and said bolt may have any suitable means such as the usual handle 6^d, by which it can be turned to forcibly adjust the jaw 5 on the bar 3. By turning said screw 6 the jaw 5 will be slidably adjusted longitudinally of and on bar 3.

The collar 6^a is wholly concealed within the recess 7^a in the wear-plate 7, and said wear-plate provides a larger bearing for the screw-head against the sliding jaw 5.

In Figs. 8 to 10 I show a slightly modified form of the vise. As shown in Fig. 8 the fulcrum block 2^c is formed on a plate 2^d which is fastened to the base 1^a by a screw 2^e within the opening in jaw 1.

The sliding bar 3, in this case, is shown as formed with an open slideway or slot 3^f, the lower surface of which bears against a clutch member 8 when the vise is in upright position and in use. Said clutch member 8 is shown as a bolt or pin that extends transversely through the shank of the jaw 1 and through the slideway 3^f, and bears upon the lower surface of said slideway, whereby the sliding bar will be adjustably held while the jaws of the vise are in their regular upright position.

The adjustable clutch member 8 may be made eccentric as shown in Fig. 10, so that by slightly turning said member in either direction it will slightly raise or lower the front end of the sliding bar 3, and thus enable any wear that may come upon the sliding bar while in use to be compensated for; the member 8 can be fastened after adjustment by tightening nut 8^c, in case the clutch member 8 could be made plain instead of eccentric.

In such case the clutch member 8 could also be made with a flat surface to bear against the bottom of the slide-way, and thus increase the bearing surface.

As shown in Figs. 1–3 the clutch member is arranged perpendicularly within the channel or slideway of the bar 3 instead of extending transversely through the slideway as in Figs. 8–9; but the action of the fulcrum back and clutch member on the bar 3 in either vise is practically the same.

I at present prefer the construction shown in Figs. 1–7 as the sliding bar has no open channel wherein filing chips or other fragments could enter therein and obstruct the free movement of the bar; and the vise presents a neat symmetrical appearance, being

perfectly plain and smooth on its sides. Also the perpendicular clutch member has a more positive grip within the channel of the bar than the transverse clutch.

These novel vises possess practical advantages over the usual standard pattern bench vises, on account of their more positive quick action; the narrow unbreakable steel sliding bar; the strong and easy support and adjustment of the sliding jaw on the bar; and the general simplicity of construction.

What I claim is:

1. In a vise, a fixed jaw having an opening and a fulcrum block at the lower side of said opening; a sliding bar adapted to slide through said opening and be supported upon said fulcrum block, said sliding bar having a slideway cut therein; a clutch member engaging said slideway whereby the sliding bar will be securely held on said fulcrum block when the jaws of the vise are in their normal upright position; and a movable jaw slidably attached to said bar.

2. In a vise, a stationary jaw having an opening and a fulcrum block adjacent the lower side of said opening, a sliding bar extending through said opening and having a slideway cut therein; said bar resting upon said fulcrum block; a clutch member engaging said slideway and connected to said jaw; said clutch member holding the sliding bar on the fulcrum block; a movable jaw fitted to slide upon the front end of said sliding bar, and a screw threaded into the sliding bar, for adjusting the movable jaw thereon, and a stop pivot to limit and guide the movement of said movable jaw on said bar.

3. In a vise, a stationary jaw having an opening, a fulcrum block adjacent the front and lower side of said opening, a sliding bar extending through said opening and having a slideway formed therein; a clutch member engaging said slideway and connected to said jaw; a movable jaw fitted to slide upon the front end of said sliding bar, a screw threaded into the sliding bar, a recessed wear plate attached to the movable jaw and a collar attached to the screw adapted to revolve in said recess, substantially as described.

4. In a vise, a fixed jaw having an opening, a fulcrum block adjacent the front and lower side of said opening; a plain surfaced rectangular bar adapted to slide through said opening and be supported upon said fulcrum block, said bar having a slideway cut therein; a movable jaw attached to said bar; a clutch member connected to the jaw and engaging said slideway and bearing upon the lower surface of said slideway whereby the sliding bar will be securely held on said fulcrum block when the jaws of the vise are in their normal upright position.

5. In a vise, a stationary jaw formed with an opening, a fulcrum block at the lower side of said opening; a sliding bar adapted to slide within the opening of said jaw and be supported upon said fulcrum block and having a slideway milled therein; a movable jaw attached to said sliding bar, and a clutch member engaged with said slideway so that the clutch will be in contact with the lower surface of said slideway when the jaws of the vise are in upright position and hold the sliding bar securely on said fulcrum block.

6. In a vise of the character described, a stationary jaw formed with an opening, a fulcrum block at the lower side and front end of said opening; a plain surfaced rectangular sliding bar adapted to slide within the opening of said jaw and be supported upon said fulcrum block and having a slideway milled therein; a movable jaw slidably attached to said bar, and a clutch member adjustably connected with said fixed jaw and engaged with the lower surface of said slideway when the jaws of the vise are in upright position, said clutch member holding said sliding bar securely on said fulcrum block.

7. In a vise of the character described, a fixed jaw having an opening, a fulcrum block within the opening of said jaw, a plain surfaced rectangular bar slidably supported upon said fulcrum block, a movable jaw slidably mounted upon said bar; a screw connected with said bar to operate said movable jaw, a stop to regulate the adjustment of said movable jaw on said bar, a recessed wear plate attached to the movable jaw, a collar on said screw engaging the recess in the wear plate to provide the full length bearing of said jaw upon the sliding bar, and a clutch member to hold said bar in contact with the fulcrum block when the vise is in use and the jaws are in upright position.

8. In a vise of the character described, a stationary jaw having an opening and a fulcrum block within the opening; a plain surfaced rectangular sliding bar engaging said opening and having a slideway, a flanged clutch member engaging said slideway and adjustably attached to said jaw so that the flanges of the clutch member bear upon the lower walls of the slideway, whereby the sliding bar will be locked and adjustably anchored and held in operation upon said fulcrum block when in its normal position; a sliding jaw fitted upon the outer end of the sliding bar, and means for adjusting said sliding bar.

9. In a vise of the character described, a stationary jaw having a fulcrum block attached thereto, a sliding bar having a slideway cut therein, a clutch member running through said slideway and pivotally connected to said jaw, a movable jaw fitted to slide upon the front end of said sliding bar which rests upon said fulcrum block, a screw threaded into the sliding bar, a recessed wear

plate for the screw attached to said movable jaw, a collar attached to the screw adapted to revolve in the recess in said wear plate and a stop to limit and guide the movement of said movable jaw.

10. In a vise of the character described, a stationary jaw formed with a fulcrum block, a plain surfaced rectangular sliding bar adapted to be slid within the opening of said jaw and be operated upon said fulcrum block, said sliding bar having a slideway milled therein; a clutch member attached to the stationary jaw and adjustably engaged with said slideway of the bar within the opening of said stationary jaw so that the clutch member will be in contact with the lower surface of said slideway when the jaws of the vise are in an upright position, and hold the sliding bar securely on said fulcrum block.

11. In a vise of the character described, a rear jaw having an opening, a plain surfaced rectangular bar slidably held upon a fulcrum block within the opening in the rear jaw; a front jaw slidably held upon said bar, a screw to operate said front jaw, a stop to regulate the moving capacity of said jaw, a recessed wear plate attached to the front jaw, a collar entering the recess in the wear plate to provide the full length bearing of said jaw upon the sliding bar, a screw carrying said collar and engaging said bar, and a clutch member to hold said bar in contact upon the fulcrum block when the vise is in use and the jaws are in an upright position.

12. In a vise of the character described, a stationary jaw formed with a fulcrum block within the opening in said jaw, a plain surfaced rectangular sliding bar having a slideway milled in it, a clutch member having a flanged head engaged with said slideway and attached to said stationary jaw so that the flanges of the head will bear upon the lower wall of the said slideway, whereby the sliding bar will be locked and adjustably anchored and held in operation upon said fulcrum block when in its normal position; and a sliding jaw fitted upon the outer end of the sliding bar, as and for the purpose set forth.

In testimony that I claim the foregoing as my own, I affix my signature.

PETER BROADBOOKS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."