

(No Model.)

W. WHITEHEAD.
PARALLEL VISE.

No. 514,344.

Patented Feb. 6, 1894.

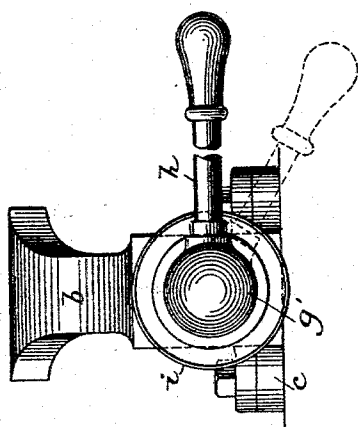


Fig. 2.

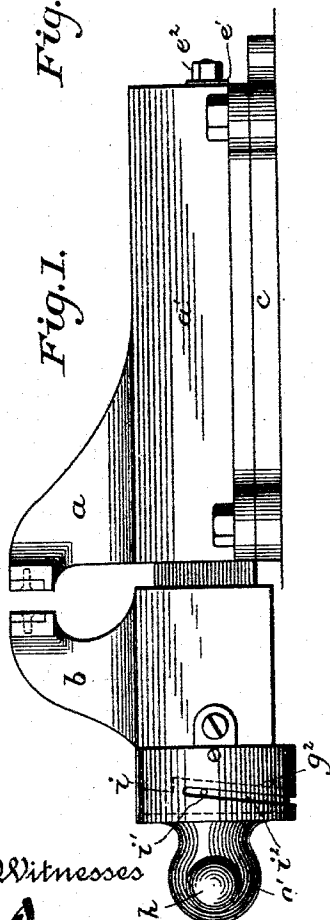


Fig. 1.

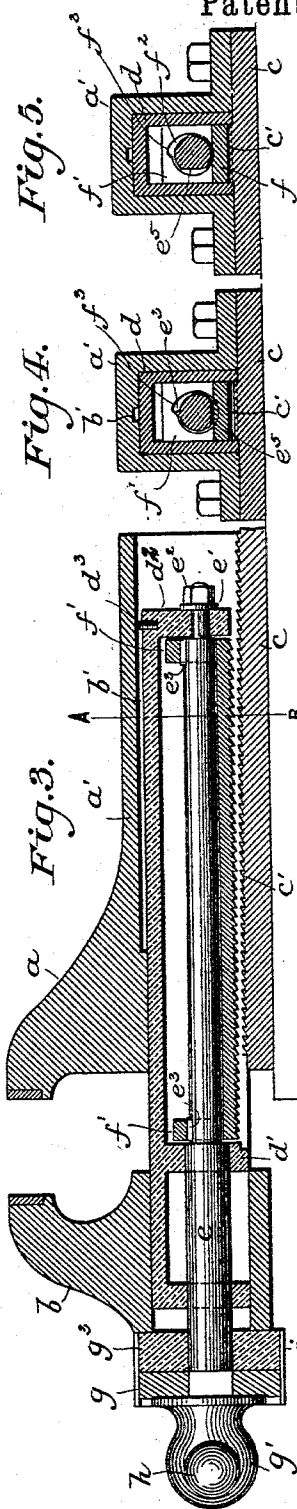


Fig. 3.

Fig. 4.

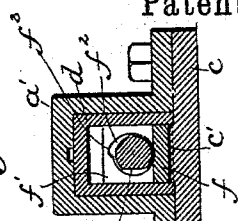


Fig. 5.

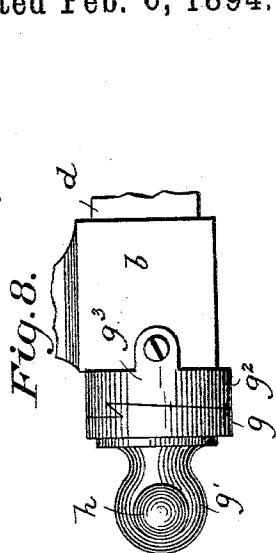


Fig. 6.

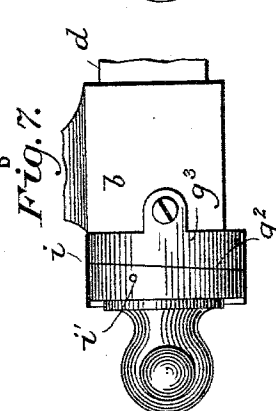


Fig. 7.

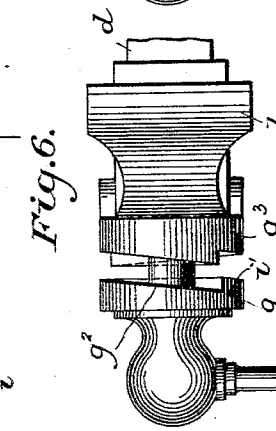


Fig. 8.



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PARALLEL VISE.

SPECIFICATION forming part of Letters Patent No. 514,344, dated February 6, 1894.

Application filed July 6, 1893. Serial No. 479,766. (No model.) Patented in England March 24, 1892, No. 5,782.

To all whom it may concern:

Be it known that I, WILLIAM WHITEHEAD, electrical engineer, a subject of the Queen of Great Britain, residing at Moss Side, Manchester, in the county of Lancaster, in the Kingdom of England, have invented certain new and useful Improvements in Parallel Vises, (for which I have received Letters Patent in England, No. 5,782, dated March 24, 1892,) of which the following is a specification.

This invention relates to improvements in parallel vises, and has for its object to provide means whereby the grip of the jaws is rendered more rapid and secure and the vise in itself less liable to get out of order, being screwless and springless.

In order that my invention may be more fully understood, I have caused to be appended hereunto one sheet of drawings marked with letters of reference indicating like parts in the various figures.

Figure 1 is a side view; Fig. 2, a front view, and Fig. 3, a longitudinal section of a parallel vise constructed in accordance with my invention. Figs. 4 and 5 are cross sections at line A—B in Fig. 3, showing respectively the rack out of and in gear. Fig. 6 is a plan view of a portion of the vise showing the inclined disks separated. Figs. 7 and 8 are side views of the front portion of the vise, showing two modifications of my invention.

In carrying out my invention, and referring to Figs. 1, 2, 3, 4, 5 and 6, I employ as usual a stationary and a movable jaw, *a* and *b* respectively. The stationary or back jaw *a*, I form with a hollow body *a'* open at its base and ends, which body *a'* I fix to a plate *c* having ratchet teeth *c'* projecting above the base of the hollow body *a'*. Into this hollow body *a'*, I fit a hollow shank *d* adjustable therein having a partition *d'* and closed ends *d²*. On the outer end of this shank, the front movable jaw *b* is arranged to slide instead of, as heretofore, being formed in one with the hollow shank *d*. The hollow shank *d*, see Fig. 3, is furnished with a stud *d³* projecting into a groove *b'* formed in the hollow body *a'* of the stationary jaw *a*, which serves to limit the outward movement of the hollow shank *d*. In each end of the hollow shank *d* and passing through the same, I mount a spindle *e*

adapted to be partially rotated and to carry and operate a rack *f*, having two lugs *f'* and fitted into the hollow shank *d*. The spindle *e* is longitudinally kept in position by reducing and furnishing its back end with a washer *e'* rendered fast thereon and a nut *e²*. The rack *f* is in length about equal to the stationary rack *c'* and adapted to be raised and lowered by the spindle *e* and thus brought in and out of gear with the stationary rack *c'*. For this purpose, I form the spindle *e* cam shaped, say near each end *e³* and at the part *e⁴* between the lugs *f'*. These cam shaped portions *e³* and *e⁴* have an angular position of about one hundred and twenty degrees relatively to each other. By preference, I form the portion *e⁴* between the lugs *f'* concentric with the spindle *e* and with a flat surface *e⁵*, see Figs. 4 and 5, which allows the rack *f* to be instantly raised out of gear by the cams *e³*. The latter are respectively adapted to operate in a square hole, or, where a very rapid action is required, preferably in a round one *f²* having a recess, *f³* (as shown in Figs. 4 and 5) formed in the rack lugs *f'* and thereby raise the latter out of gear, see Fig. 4, while the inner cam *e⁴* serves to press on the rack *f* and thus hold it firmly in gear with the stationary rack *c'* when the spindle *e* receives a partial turn, see Fig. 5.

The front of the spindle *e* is formed or furnished with a shoulder or disk *g* and eye *g'*, which latter receives the sliding pin as usual, or a handle *h*, solid therewith, or screwed to it, as shown in Fig. 2. The inner face of the shoulder or disk *g*, I form with a double incline *g²*, Fig. 1, or with a single incline, as shown in Fig. 7, adapted to operate against another disk *g³* having a similar double or single incline on the front of the sliding front jaw *b* and thus displace and force the latter home on its shank *d* whenever the spindle *e* is turned by its pin or handle *h*.

During the first part of the turn of the spindle *e*, the cams *e³* lower and the cam *e⁴* holds the movable rack *f* firmly in gear with the stationary rack *c'*, thus locking the hollow shank *d* in position, while the sliding front jaw *b* is forced home by the inclines *g²*. On the return movement of the spindle *e*, its end cams *e³* lift the movable rack *f* out of gear

with the stationary rack *c'* and thus permit the longitudinal adjustment of the hollow shank *d*.

In order to prevent the loose jaw *b* sticking on the return movement of the cam spindle *e*, the highest points of the inclines *g*² are formed dovetail or nose shaped, as shown in Fig. 8, so as to engage each other and thus tie the sliding front jaw *b* and hollow shank *d* together longitudinally. For the purpose of protecting the incline or inclines *g*² from foreign matter I fix around the same a cover *i* as shown in Fig. 1, having a stud or studs *i'* adapted to engage a groove or grooves *i*² in the disk *g*. This also serves to tie the two disks *g* *g*³ together in lieu of the dovetail projection shown in Fig. 8.

I declare that what I claim is—

1. In a vise the combination of a fixed jaw having a hollow shank provided internally with a series of teeth, a movable jaw, a box carrying the same and extending loosely through the fixed jaw, a spindle passing through the said box and provided at one end with an operating handle, a locking plate carried by the spindle, and provided with a series of teeth and with perforated lugs to receive the spindle, and cams fixed on the spindle in position to engage the lugs on the locking plate; whereby on the rotation of the spindle the locking plate will be moved to cause its teeth to engage or disengage those on the fixed jaw and thereby lock or unlock the parts.
2. In a vise the combination of a fixed jaw having a hollow shank provided internally with a series of teeth, a movable jaw, a box carrying the same and extending loosely through the fixed jaw, the said box being provided with closed ends *d*² and with a partition *d'*, a locking plate provided on its side with a series of teeth, and at its ends with perforated lugs, an operating spindle passing through the box and through the perforated lugs, cams *e*³ on said spindle adapted to engage within the lugs for raising, and the oppositely disposed cam *e*⁴, near the center of the spindle for depressing said locking plate; whereby the parts may be locked by rotating the operating spindle in one direction and unlocked by rotating it in the opposite direction.
3. The combination with the fixed and movable jaws, of the box extending loosely through

the same, the clamping device within the box adapted to engage one of the jaws, the spindle rotatably connected with the box and with the clamping device to operate the latter, the spindle-head having an active cam face, and a cam on the jaw with which the spindle-head co-acts.

4. The combination of the fixed jaw *a*, movable jaw *b*, disk *g*³ attached thereto, having an incline *g*² in combination with the spindle *e* and disk *g* having a corresponding incline working on the incline of disk *g*³ and a clamping device worked by the spindle *e* whereby by turning the spindle, the clamping device comes into effect and at the same time the movable jaw is pressed forward toward the fixed jaw.

5. The combination of the spindle *e* having cams *e*³ having their maximum point concentric for a long distance in combination with the forward propulsion device *g* *g*³, actuated by the spindle whereby after the clamping has taken effect the spindle can turn for a considerable distance actuating the forward movement of the loose jaw without unclamping.

6. The combination of the spindle *e* having cams *e*³ and *e*⁴ and the clamping pieces *f'* *f* whereby the clamping can be immediately applied and yet the spindle be allowed to rotate for some distance and the clamp can be immediately withdrawn and again the spindle allowed to rotate for some distance before the clamp is again brought into play.

7. The combination of the disk *g*³ attached to the movable jaw and having an inclined plane *g*², the disk *g* fitted to the spindle *e* and having a similar inclined plane and the cover *i* having groove *i*² and stud *i'* for the purposes described.

8. The combination of the fixed jaw *a*, a sliding but clampable device *d*, movable jaw *b* sliding on piece *d* and spindle *e* having the usual handle and head *h* and *g'* with a disk *g*³ and a device on the spindle capable of giving a small longitudinal motion to said disk.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM WHITEHEAD.

Witnesses:

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G. C. DYMOND.