

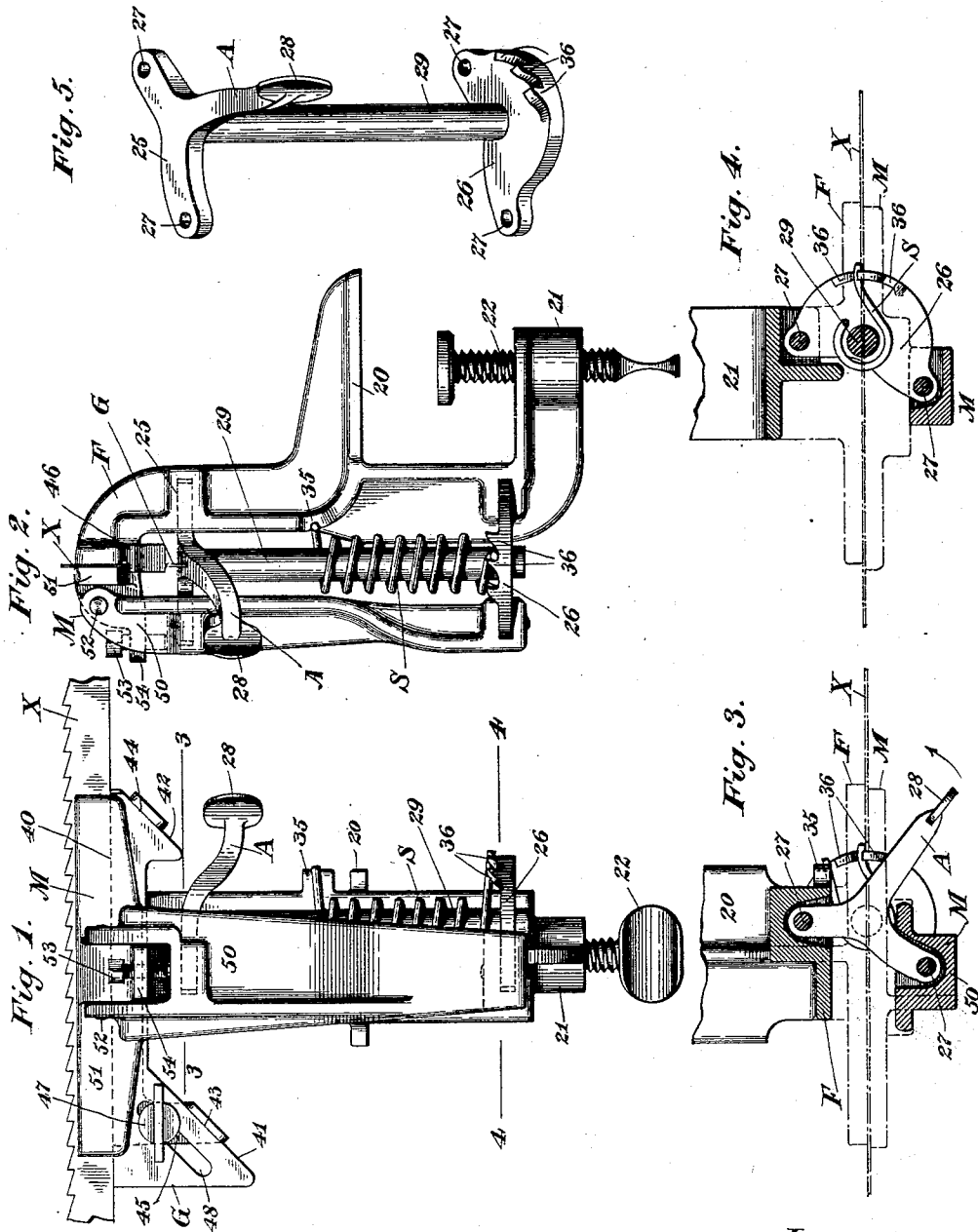
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R. S. BROWN.
SAW CLAMP.

(Application filed Nov. 11, 1898.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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SAW-CLAMP.

SPECIFICATION forming part of Letters Patent No. 632,694, dated September 12, 1899.

Application filed November 11, 1898. Serial No. 696,113. (No model.)

To all whom it may concern:

Be it known that I, ROBERT S. BROWN, a citizen of the United States, residing in New Britain, county of Hartford, and State of Connecticut, have invented certain new and useful Improvements in Saw-Clamps, of which the following is a specification.

This invention relates to vises, the object of the invention being to provide an improved and simple article of this character which is adapted, among other purposes, to firmly clamp a saw, either to sharpen or to set the teeth thereof.

My improved vise includes as one of its features two jaws and a pair of links connecting said jaws, the axis of one of the links at one end being transverse to the clamping-surfaces of said jaws, whereby the operation of the links in opposite directions will swing the movable jaw toward or from the fixed jaw, and in connection with the jaws an actuator is employed which serves normally to throw said movable jaw toward its companion, and this actuator may consist of a spring, although it is evident that said movable jaw may be operated by hand or by some other kind of device. The vise therefore includes a fixed jaw and a movable jaw, and these two parts are usually connected by two superposed links movable in parallelism, the construction being such that the gripping and releasing movement of the jaw may be caused by the manipulation of one or both of the links, and it will be apparent that in addition to this operation the movable jaw will have an independent rocking or oscillatory motion for the purpose of accommodating itself to any inequalities or variations in the thickness of the saw-blade to be clamped. The two links are preferably connected for movement in unison by a bar which may be encircled by a coiled torsional spring acting, respectively, against the fixed jaw and the movable jaw and serving normally to throw the latter toward its companion.

The vise is also equipped with means for regulating the tension of the jaw-operating spring, and said regulating means is shown as consisting of a series of teeth on one of the links adapted to be engaged by one end of

the spring. To vary the tension of said spring, the free end thereof will be shifted from one to another tooth of the series.

In connection with the vise a gage is also employed, which is adjustable and upon which the back of the saw can rest, so as to maintain the saw in true position and against edgewise movement.

In the drawings accompanying and forming part of this specification, Figure 1 is a front elevation of my improved vise. Fig. 2 is a side elevation of the same. Figs. 3 and 4 are details in sectional plan view, the sections being taken, respectively, in the lines 3 3 and 4 4, Fig. 1; and Fig. 5 is a detail in perspective, showing the two links and also a device connecting the same.

Similar characters designate like parts in all the figures of the drawings.

My improved vise includes a fixed jaw, as F, and a movable jaw, as M, said fixed jaw having offsets, as 20 and 21, the first mentioned of which is adapted to rest upon a bench or table and the latter of which carries a set-screw, as 22, adapted to bind against the under side of the bench or table to hold the vise in position. The two jaws are connected at different points by a pair of links, (shown as 25 and as 26,) located horizontally one above the other and in parallelism, the opposite ends of the said links being pivoted or otherwise jointed to the respective jaws, and the several pivots being designated by 27.

In Figs. 3 and 4 the movable jaw of the device is shown as being in its closed or clamping position and as holding a saw, as X, against the fixed or stationary jaw F. To release the saw, the jaw M will be swung outward, either by power applied directly to said jaw or to one or the other of the two links; but I prefer to actuate one of the links to open the movable jaw. The upper link 25 preferably carries an actuator, as A, which is illustrated, consisting of a transverse extension fixed to the link and having a thumb-piece 28, by which the same may be operated in opposite directions. To release a saw from between the jaws, as represented in Fig. 3, pressure will be applied to the actuator A to force the same in the direction of the arrow in said fig-

ure, which operation will withdraw the movable jaw from its mate.

While the actuator A may also serve to throw the jaw M into engagement with the saw, I prefer to employ an independent actuator, serving normally to force said movable jaw toward the fixed jaw, and which actuator may consist of a spring, as S, shown as a coiled one.

The superposed parallel links are connected for movement in unison by a bar, as 29, shown as integral with and depending from the upper link 25 and as also integral with the lower link, said bar serving to maintain the two links in absolute parallelism during the operation of the movable jaw.

The spring S for actuating the movable jaw is represented as a coiled one, (although it is evident that the invention is not limited to this feature,) and it usually encircles the connecting-bar 29, and its opposite ends act against the respective jaws. The upper free end of the coiled spring S is illustrated as fitting in the notch 35 in the fixed jaw F, while the opposite free end of the spring is shown in engagement with one of the series of teeth 36 on the upper side of the link 26. Should it be desired to vary the tension of the spring, the lower free end thereof can be shifted from the position shown in Fig. 2 to engage one of the other teeth of the series, either to tighten or loosen said spring.

In connection with the jaws a gage is provided which is usually adjustably supported by the fixed jaw, said gage being designated by G and consisting in the present case of a flat plate having a straight longitudinal upper edge disposed in parallelism with the upper edges of the two jaws and upon which the back of a saw can rest, thereby to maintain said saw-back in parallelism with the edges of the jaws, and by reason of the adjustment of the gage it is to be adapted to saws of different widths, the object being to insure at all times the relationship just pointed out. The upper edge 40 of the gage, as just stated, is straight, and it forms a stable rest for the saw X while being operated upon, and it has the parallel oblique faces 41 and 42, respectively, near its opposite ends, adapted to fit against and slide upon the inclined faces 43 and 44 of the ears or lugs 45 and 46, respectively, depending from the fixed jaw F near the upper end thereof. By raising or lowering the gage G its adjustment relative to the jaws is thereby obtained, and any convenient means may be employed for holding the same in a fixed position. For this purpose I have illustrated a binding-screw 47, which passes through the elongated slot 48 near the upper end of the gage, said slot being, of course, oblique to correspond with the oblique faces 41, 42, 43, and 44, and said screw is in threaded engagement with the lug 45. To change the position of the gage from that shown in Fig. 1, the screw 47 is loosened, so that the gage

can be moved either up or down, as the case may be, and when in the correct location the screw is tightened to hold the same firmly in place.

To clamp a saw in place, the actuator A is operated to carry the jaw M outward and away from the complementary jaw, after which the saw X is placed in contact with the inner straight face of the fixed jaw and against the upper edge of the gage G, at which time the actuator A is released, and the relaxing coiled spring S by working against the link 26 becomes instantly effective to throw the movable jaw into firm engagement with the saw and to also hold the same tightly in place to be operated upon.

The saw as the teeth thereof are filed or set is usually fed to the right, and this operation can be accomplished by a slight pressure thereon. If, however, stress should be applied to the saw toward the left while the same is under action, the force thus exerted tends, by reason of the frictional engagement between the saw and the movable jaw, to swing the latter farther inward and into firmer engagement with said saw, so that the thrust thus applied aids the spring in holding the jaw in firm contact with the saw.

It will be noticed that the pivotal points of the links are so arranged that when a thicker saw is inserted between the jaws the pivotal points of the movable jaw will be swung in the arc of a circle, so that the spring can then exert a greater pressure on said jaw, this action being due to the leverage exerted by the links upon said movable jaw. During the opening action of the movable jaw the tension of the spring is also increased, and when the jaw is released a combined enhanced effect, due to both the leverage of the links and the tension of the spring, is therefore exerted by said jaw against the saw-blade.

There are some classes of saws which are beveled or V-shaped in cross-section, and for the purpose of obtaining a firm hold upon a saw of this shape one of the jaws of the clamp usually consists of two sections, one of which is supported for tilting movement or angular adjustment relatively to the other, and the movable jaw of the vise is thus illustrated, although it is evident that this relation could be reversed without departing from the scope of the invention. Said jaw M consists of a main section 50 and an auxiliary or tilting section 51, pivoted, as at 52, to the first-mentioned part for shifting movement relatively thereto.

To set or file the teeth of a beveled saw, it is placed against the inner face of the fixed jaw F, it being understood that the movable jaw M is open. Afterward the upper section 51 of the jaw is adjusted to conform to the angle of the saw, and when adjusted it is locked against movement. The adjusting and locking device for the jaw-section 51 consists in the present case of a set-screw 53 in

threaded engagement with the offset 54 of said jaw-section and the lower end of which is adapted to engage the section 50.

In Fig. 2 the vise is represented as clamping a saw the opposite edges of which are parallel. Should it be desired to clamp a beveled saw, the screw 53 is rotated sufficiently to effect the inclination of the part 51 so that the working face thereof will conform to that of the saw, and when this adjustment is obtained the jaw M is swung inward to grip the saw.

It will be evident that by reason of the pivotal connection between the movable jaw M and the parallel links 25 and 26 said jaw may rock, so that in case there should be any inequalities in the thickness of a saw at different points in its length said movable jaw will adapt itself to the differences and firmly hold the saw, notwithstanding these defects.

I do not limit myself to the construction illustrated and described, for various details may be altered without departing from the scope of my invention. For example, the actuator A need not be made in one piece with the link 25, nor is it necessary that the bar 29 be made integral with the two links, but for convenience and cheapness they are cast in one piece.

Having described my invention, I claim—

1. A vise consisting of two jaws and a pair of rigidly-united links connecting said jaws and serving to impart a clamping force to the movable jaw.

2. A vise including two jaws one of which is movable, a pair of rigidly-united links connecting said jaws and serving to impart a clamping force to the movable jaw, and a jaw-actuator.

3. A vise including two jaws, a pair of parallel links, rigidly united as set forth, connecting said jaws, and serving to impart a clamping force to the movable jaw, and two independent actuators serving, respectively, to close and open said movable jaw.

4. A vise including two jaws, a pair of superposed rigidly-united links connecting said jaws and serving to impart a clamping force to the movable jaw, and a jaw-closing actuator acting against one of the links.

5. A vise including two jaws, a pair of rigidly-united links connecting said jaws and serving to impart a clamping force to the movable jaw, and a jaw-operating spring acting against one of the links.

6. A vise including two jaws, a pair of rigidly-united links connecting said jaws and serving to impart a clamping force to the movable jaw, a spring for operating said movable jaw, and means for regulating the tension of said spring.

7. A vise including two jaws; a pair of links jointed to the jaws; a device connecting the links; and a coiled spring surrounding said device and acting against the jaws.

8. A vise including two jaws; a pair of links jointed to the jaws, one of the links having a series of teeth; a device connecting the links; and a spring, the opposite ends of which are adapted to engage one jaw and said teeth respectively.

9. A vise including two jaws; a pair of rigidly-united links jointed to the jaws and serving to impart a clamping force to the movable jaw; a device connecting the links; and two independent jaw-actuators acting respectively against said links.

10. A vise including two jaws; a pair of rigidly-united links jointed to the jaws, one of the links having an extension, said links serving to impart a clamping force to the movable jaw; a device connecting the links; and a jaw-operating spring.

11. A vise consisting of two jaws, a pair of rigidly-united parallel links connecting said jaws and serving to impart a clamping force to the movable jaw; and a gage having a straight edge in parallelism with the upper edges of said jaws and adjustably supported by one of said jaws.

12. A vise including fixed and movable jaws, one of them having a pair of lugs having angular faces; a gage having angular faces adapted to fit against, and slide upon, the first-mentioned angular faces, said gage having a straight edge parallel with the upper edges of the jaws; means for holding said gage in a fixed position; and a pair of rigidly-united links connecting said jaws and serving to impart a clamping force to the movable jaw.

13. In a device of the class specified, the combination, with a fixed jaw, of a pair of links; a device rigidly connecting said links; a jaw mounted for independent movement on said links; and means for actuating said last-named jaw.

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Witnesses:

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