G. E. CASSEL.

PARALLEL BENCH VISE.

APPLICATION FILED FEB. 17, 1920.

1,352,787. Patented Sept. 14, 1920.

Fig. 2

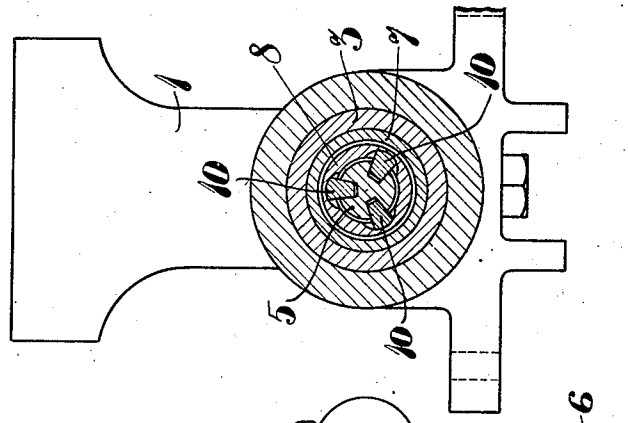
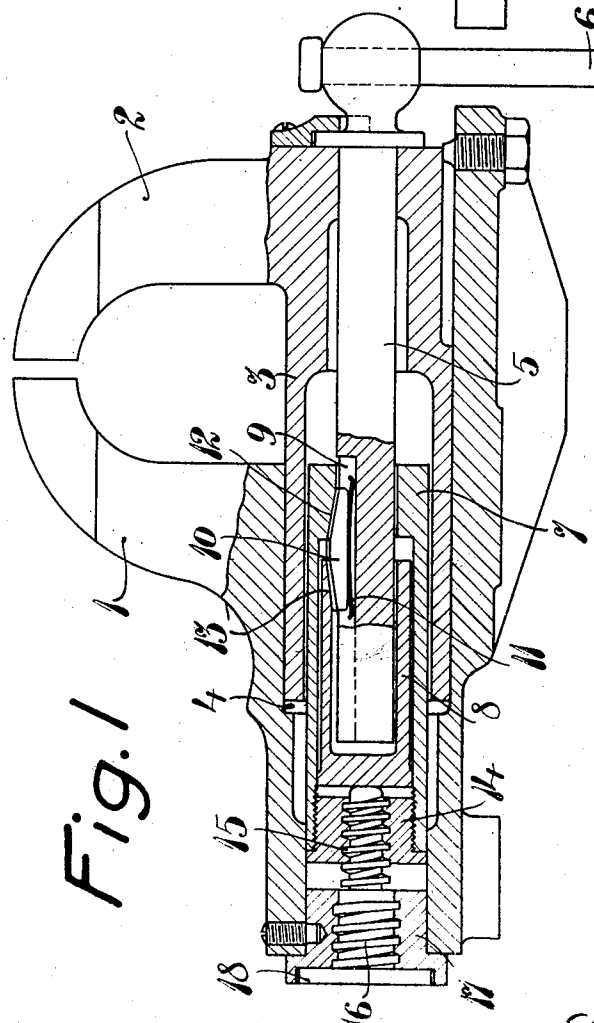


Fig. 1



Inventor

Gunnar Elias Cassel.

By Hammond & Co. Atty

UNITED STATES PATENT OFFICE.

GUNNAR ELIAS CASSEL, OF STOCKHOLM, SWEDEN, ASSIGNOR TO AKTIEBOLAGET GYRO, OF STOCKHOLM, SWEDEN, A CORPORATION OF SWEDEN.

PARALLEL BENCH-VISE.

1,352,787. Specification of Letters Patent. **Patented Sept. 14, 1920.**

Application filed February 17, 1920. Serial No. 359,477.

To all whom it may concern:

Be it known that I, GUNNAR ELIAS CASSEL, a citizen of the Kingdom of Sweden, residing at Stockholm, Sweden, have invented new and useful Improved Parallel Bench-Vises, of which the following is a specification.

This invention relates to a parallel bench vise.

The object of the invention is to provide a bench vise of this kind, in which the movable jaw may be moved freely during the main part of each setting movement, inasmuch as in clamping work the final tightening of the movable jaw only and in releasing work the initial opening movement only must be effected by means of a screw mechanism.

The principal feature of the invention consists in providing the movable jaw with a bolt rotatably mounted therein, a coupling mechanism being provided between said bolt and a screw said coupling mechanism normally permitting free movement of the bolt but locking the bolt to the screw for the purpose of effecting the final tightening of the movable jaw as soon as the bolt is rotated.

In the accompanying drawing, a bench vise embodying this invention is illustrated. Figure 1 is a longitudinal section of the vise, and Fig. 2 is a cross section thereof.

With reference to the drawing, the numeral 1 designates the fixed jaw of the bench vise, and 2 is the movable jaw thereof. The movable jaw is slidably mounted, as by means of a sleeve-shaped portion 3 in a corresponding boring in the fixed jaw. Rotatably but not slidably mounted in the lower portion of the jaw 2 and extending through the sleeve 3 thereof is a bolt 5 the part of which extends beyond the front of the jaw 2 and carries a handle 6 of well known construction. The inner end of the bolt 5 engages loosely in two sleeve-shaped members 7, 8, the former of said members being slidably mounted in an extension of the boring 4 has a reduced diameter, while the sleeve 8 is slidably mounted within the sleeve 7. Formed in the part of the bolt 5 engaging said sleeve-shaped members 7, 8 is a plurality of longitudinally extending slots 9 (in Fig. 2 three such slots are shown). Each of said slots contains a double wedge 10 supported by a spring 11 resting on the bottom of the corresponding slot. One inclined surface 12 of each wedge is adapted to engage a conical recess formed in the sleeve 7 while the other inclined surface 13 of each wedge is adapted to engage a similar recess formed in the sleeve 8. The double wedges 10 engage said recesses in such a way as to prevent relative rotation of the members 5, 7, 8, as will be seen from Fig. 2, which shows the engagement of the wedges in the sleeve 8.

Inserted in the end of the sleeve 7 remote from the bolt 5 is a screw threaded plug 14 forming a bottom of said sleeve while the sleeve 8 is formed with a bottom made integral with the sleeve. A threaded opening in the plug 14 is engaged by a screw 15, extending through the plug 14 and bearing with its inner end against the bottom of the sleeve 8. The screw 15 is made integral with a screw 16 having a greater pitch than that of the screw 15 and engaging in a fixed nut 17, the screw carrying outside thereof a head 18.

The bench vise described operates as follows: Assuming the jaws are in the position shown in Fig. 1 and work is to be introduced therebetween, the jaw 2 with the bolt 5 is first moved outwardly which may be effected without any difficulty as the angle of each wedge 10 is so adjusted that the wedge will not prevent the displacement of the bolt 5. After the jaws are thus removed sufficiently to permit the insertion of the work, the latter is placed between the jaws whereupon the distance between the jaws is decreased by moving the jaw 2 inwardly till both jaws will contact with the work. The bolt 5 is then turned to the right by means of the handle 6. The wedges 10 will in this movement take the sleeves 7 and 8 with them. The sleeve 7 is thereby turned about the screw 15 and moves, consequently, to the left in Fig. 1, while the screw 15 will prevent any displacement of the sleeve 8. It is obvious that the conical recesses of the sleeves 7 and 8 due to the said movement will draw nearer to one another and will as a result come into contact with the wedge surfaces 12 and 13, respectively, thereby pressing the wedges inwardly toward the bottom of the corresponding slot 9 in the bolt 5. By this the bolt 5 will be locked to the sleeves 7 and 8, and when this locking becomes strong enough to prevent any further relative movement of the sleeves 7 and

8, the screw 15 will be caused to turn with the bolt 5, and upon the continued turning of the bolt 5 the screw will move outwardly (to the left in Fig. 1), due to the engagement of the threads 16 in the nut 17. The bolt 5 with the movable jaw 2 is thereby moved toward the fixed jaw 1, till the work is rigidly clamped between the jaws so as to prevent any further relative movement of the jaws.

When the work is to be released, the bolt 5 is first turned to the left. The bolt 5 will then take the sleeves 7 and 8 together with the screw 15, 16 with it, till the head 18 of the latter strikes the nut 17, after which the sleeve 7 will be turned inwardly (to the right) on the screw threads 15 thereby effecting a separation of the sleeves 7 and 8 so as to release the wedges 10 and permit the free displacement of the bolt 5 with the jaw 2.

From the foregoing it will be seen that in clamping the work the final tightening movement only and in releasing the work the initial opening movement only is effected by turning the bolt 5, while the main part of the movements of the movable jaw may be effected by directly displacing the jaw by the hand which will, of course, result in a considerable saving of time in operating the vise.

Having thus described my invention, what I claim as new is:—

1. A bench vise comprising in combination a fixed jaw and a jaw freely slidable with respect to said fixed jaw, a bolt rotatably mounted in the movable jaw, a fixed nut, a screw mounted in alinement with said bolt and engaging the fixed nut, and a coupling mechanism permitting displacement of the bolt but interlocking the latter and the screw when the bolt is rotated.

2. A bench vise, comprising in combination a fixed jaw, a jaw freely movable with respect to the fixed jaw, a bolt rotatably mounted in the movable jaw, two sleeves movable with respect to the fixed jaw as well as with respect to each other, one of said sleeves being mounted within the other, while both of said sleeves are engaged by said bolt, a screw engaging a screw-threaded hole in the bottom of one of said sleeves and bearing against the bottom of the other sleeve, a second screw made integral with the first-mentioned screw, a fixed nut engaged by said second screw, and means for causing the said sleeves to move with the bolt upon rotation of the latter.

3. A bench vise, comprising in combination a fixed jaw, a jaw freely movable with respect to the fixed jaw, a bolt rotatably mounted in the movable jaw, two sleeves movable with respect to the fixed jaw as well as with respect to each other, one of said sleeves being mounted within the other, while both of said sleeves are engaged by said bolt, a screw engaging a screw-threaded hole in the bottom of one of said sleeves and bearing against the bottom of the other sleeve, a second screw made integral with the first-mentioned screw, and the pitch of which is greater than that of the said first-mentioned screw, a fixed nut engaged by said second screw, and means permitting longitudinal displacement of the bolt with respect to said sleeves but causing the sleeves to move with the bolt upon rotation of the latter.

4. A bench vise, comprising in combination a fixed jaw, a jaw freely movable with respect to the fixed jaw, a bolt rotatably mounted in the movable jaw, there being longitudinal slots in said bolt, a fixed nut, wedge-shaped locking members in said slots, two sleeves movably mounted in the jaws and one of which is movably mounted within the other, said sleeves being engaged by the bolt and having inclined surfaces for engagement with said sleeves, and a screw engaging with said sleeves so as to cause a relative longitudinal movement thereof upon rotation of the sleeves.

In testimony whereof I have signed my name.

GUNNAR ELIAS CASSEL.