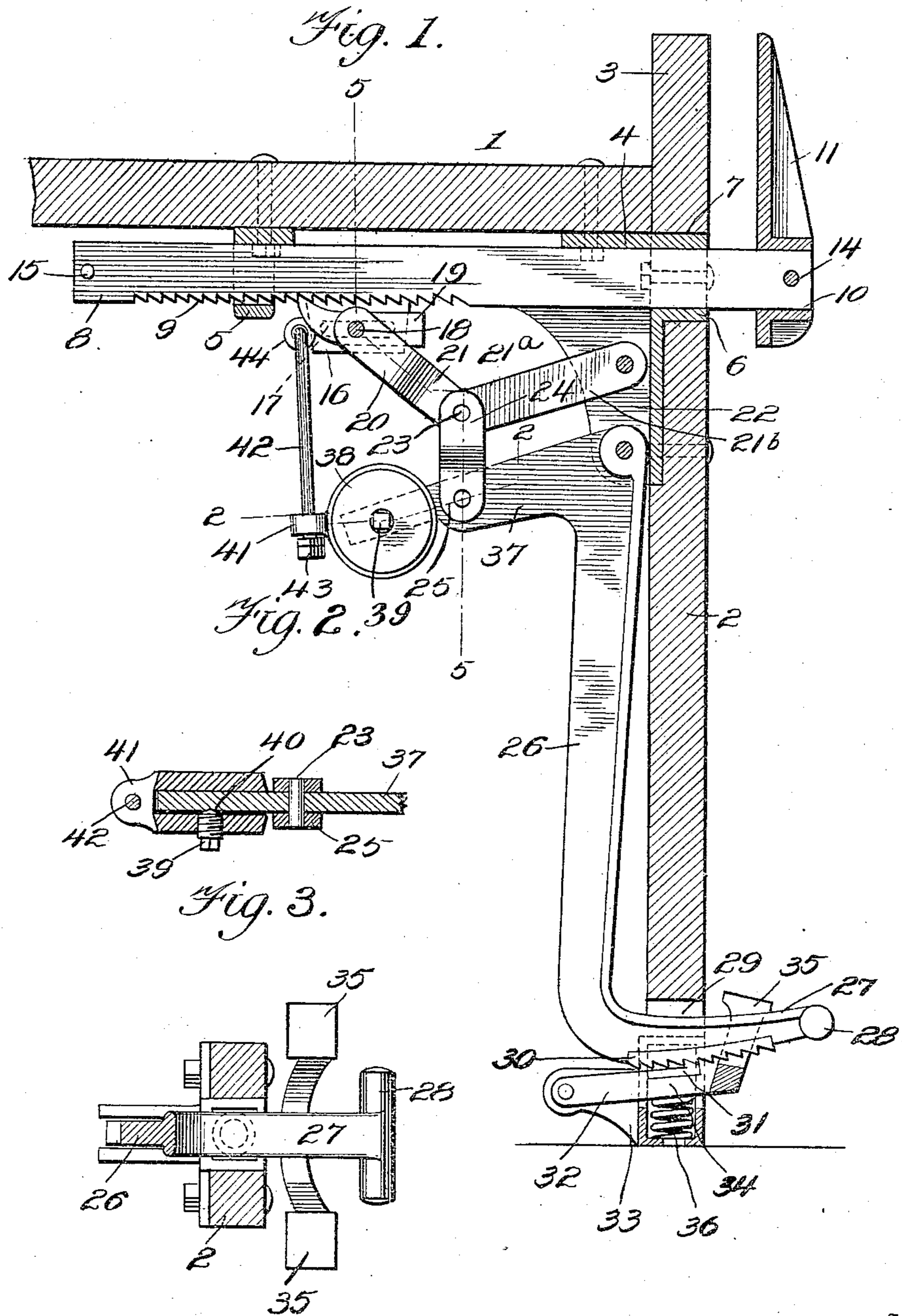


E. E. THAYER.
BENCH VISE.
APPLICATION FILED SEPT. 24, 1909.

969,003.

Patented Aug. 30, 1910.

2 SHEETS—SHEET 1.



Inventor
Elmer E. Thayer

Witnesses
J. F. Schumacher
James A. Schumacher

By Victor J. Evans
Attorney

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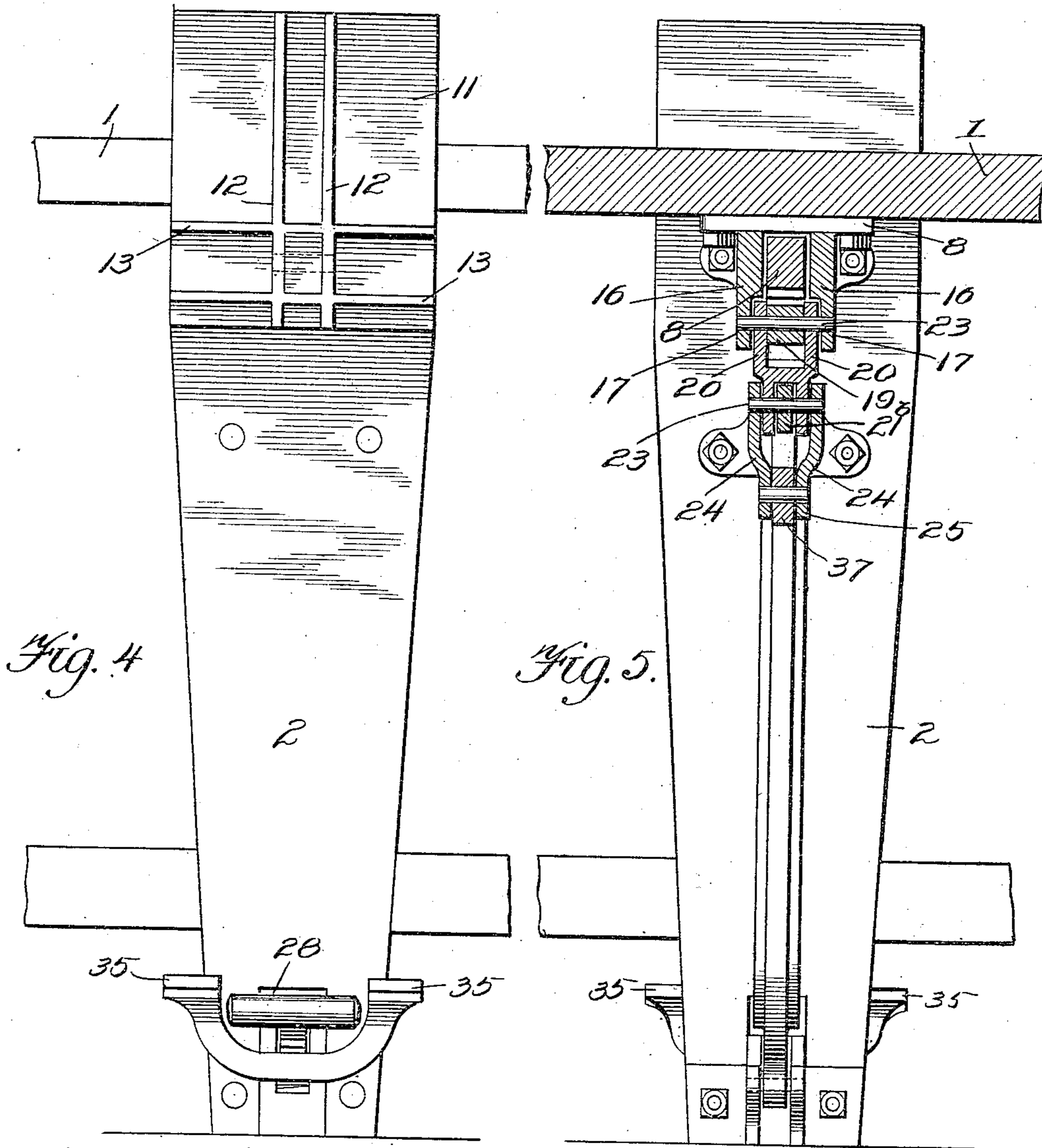


Fig. 6.
Witnesses
J. H. K. M. J.
James A. L. L.

Inventor
Elmer E. Thayer

By Victor J. Evans
Attorney

UNITED STATES PATENT OFFICE.

ELMER E. THAYER, OF STEGE, CALIFORNIA.

BENCH-VISE.

969,003.

Specification of Letters Patent. Patented Aug. 30, 1910.

Application filed September 24, 1909. Serial No. 519,342.

To all whom it may concern:

Be it known that I, ELMER E. THAYER, a citizen of the United States, residing at Stege, in the county of Contra Costa and State of California, have invented new and useful Improvements in Bench-Vises, of which the following is a specification.

This invention relates to bench vises, and has for an object to provide a device of this character which will include novel and simple means for adjusting the jaw, and for holding the same in the desired position.

Other objects and advantages will be apparent as the nature of the invention is further disclosed, and it will be understood that changes within the scope of the claims can be made without departing from the spirit of the invention.

In the drawings, forming a portion of this specification and in which like numerals of reference indicate similar parts in the several views:—Figure 1 is a vertical section through my improved vise. Fig. 2 is a detail horizontal section taken on the line 2—2 of Fig. 1. Fig. 3 is a detail section taken on the line 3—3 of Fig. 1. Fig. 4 is a front elevation of the vise. Fig. 5 is a section taken on the line 5—5 of Fig. 1. Fig. 6 is a detail section taken through a portion of the vise showing a slightly modified form of dog.

As illustrated, the vise herein shown consists of a bench 1 provided with a supporting standard 2 which has a portion extended upwardly in a vertical plane to or above the bench top to form the fixed jaw 3 of the vise. Upon the underside, the bench has secured thereto a bracket 4 provided with guide members 5 and 6 disposed in line with each other, the member 6 being disposed in a passage 7 formed in the standard. The said guide members have slidably mounted therein a bar 8 having upon its bottom face or edge, a series of rack teeth 9. The bar 8, at its outer end is engaged in a socket 10 of a jaw 11, which latter consists of a vertically disposed metallic plate provided with a perfectly smooth inner face, as shown, and upon the outer face, the said plate is provided with a plurality of vertical reinforcing ribs 12 and with a plurality of horizontal ribs 13. The jaw 11 may be secured to the bar 8 by means of a pin 14 or the like so that the same can be removed and replaced by a jaw of a different character according to the work to be performed, as will be fully un-

derstood. The inner end of the bar 8 is provided with a stop 15 adapted, as will hereinafter appear, to engage the guide member 5 so as to prevent casual displacement of said bar.

The bracket 4 has depending therefrom a pair of ears 16 between which the bar 8 is slidably disposed and these ears have formed therein elongated slots 17 which receive the ends of a pin 18. The pin 18 is engaged with a dog 19 and with the arms 20 of a fork at the inner end of a link 21 which forms part of a toggle lever 21^a. The link 21^b of said lever is pivoted to the inwardly extending web 22 of the bracket 4, and at the other end to the inner end of the link 21 by means of a pin or the like 23. The arms 24 of links 25 are pivotally engaged at their upper ends with said pin 23. A lever or actuating element 26 is pivoted at its upper extremity to the web 22 and extends downwardly from the said web and is located directly behind the standard 2. The lever or actuating element is provided at its lower extremity with an outwardly directed foot engaging arm 27 which carries a head 28 that can be conveniently engaged by the foot of the operator of the vise. The arm or foot engaging portion is disposed with a portion in an elongated vertical slot 29 formed in the standard 2 and the under face of said arm has secured thereto a ratchet element or bar 30 having its teeth extending downwardly so that they can be engaged by the pawl 31 carried by the lever 32. The lever 32 is pivoted at its inner end to the bracket 33 of the standard 2 and extends through the slot 29, the arm 34 of said lever having a yoke-shaped outer end portion which straddles the portion 27 of the lever 26 and which provides at each side of said lever a foot engaging finger 35. In order that the dog may be normally held in engagement with the ratchet element 30 I provide at the lower end of the standard 2 a strong helical spring 36 or suitable elastic element engaged with said lever 32.

The lever 26 carries at its upper end, a downwardly inclined support or member 37 to which the lower ends of the links 25 are pivoted, as shown. At the lower end, the support or member is disposed in a balancing weight 38, and secured in its operative position by means of a set screw or fastening 39. The screw 39 is beveled upon one end and is seated or engaged in a corre-

spondingly shaped recess 40 in the member or support 37. The disks are connected to each other by means of an ear 41 perforated to receive the lower end of a connection or
 5 guide rod 42. The lower end of the rod or connection is provided with adjusting nuts 43, and the upper end is loosely mounted in an eye 44 that extends from the dog 19. It
 10 may be mentioned that the nose 45 of the dog extends upwardly and is beveled at its outer end to effectively engage the teeth of the bar 8.

In operation, the portion 28 of the lever 26 is depressed by the foot of the operator of the device and in this movement the arm
 15 37 of the lever will be moved upwardly to carry therewith the links 24 and in view of the fact that these links are operatively connected with the toggle lever, the tendency
 20 of the links forming said lever will be to assume approximately a horizontal position and will force the pin 18 in a rearward direction and in view of the connection between this pin and the bar engaging dog 19,
 25 the latter will effectively engage the teeth of the bar to transmit to the latter a sliding movement in a rearward direction, thus accurately and in a convenient manner moving
 30 the jaw 11 toward the fixed jaw 3 at the upper end of the standard 2. The construction of the device herein disclosed is such that the teeth of the rack bar 30 will be engaged with the pawl 31 after the lever 26
 35 has been operated as just described whereby the sliding jaw is held in its proper adjusted position. When it is desired to release the dog 19 from the co-engaging teeth of the bar 8, the arm 34 is pushed downwardly by the
 40 foot of the operator so as to disengage the dog 31 from the teeth of the bar 30. The lever 26 herein disclosed is such that it will have a tendency when disengaged from the dog 31 to swing forwardly and in this movement,
 45 the rod 43 which is carried by the disks 38 will be drawn downwardly so as to draw the tooth engaging portion of the dog 19 into its inoperative position, or in other words release this dog from the rack bar to
 50 allow the latter to be moved in a forward or rearward direction.

In the form of my invention shown in Fig. 6, the bench 1^a is provided with a bracket 4' from which ears 16' depend, and
 55 as illustrated these ears are slotted longitudinally in a manner identical with that described in the preferred form of my invention. A dog 17' is disposed between the ears and is provided with a horizontally disposed
 60 pin 18' which is engaged at its ends in the slots formed in the ears 16'. The pin 18' is engaged with the dog at a point adjacent to the front end thereof so that the dog is provided with a weighted tail 19'. The forward
 65 edge portion of the tail is inclined and is adapted for coöperation with a pin or dog

releasing means 20'. Links 21' are engaged with the end portions of the pin 18'; and these links are equivalent to corresponding links forming a portion of the toggle lever described in the preferred form of my invention. The construction of the modified
 70 form of my invention is such that when the pin 18' is at the rearward limit of its movement the toothed end of the dog is held out of engagement with the teeth of the rack
 75 bar 8' by reason of the fact that the inclined face of the dog is engaged with the pin or releasing means 20' so as to hold the weighted end of the said dog upwardly. Upon movement of the pin 18' in a direction
 80 opposite to that just described the inclined face of the dog will be moved out of engagement with the pin or releasing means 20' whereby the weighted end of the dog will fall downwardly by gravity in order that
 85 the rack bar engaging portion of the dog can be moved into its operative position.

I claim:—

1. A bench vise comprising a fixed jaw, a sliding rack bar, a jaw upon the said rack
 90 bar coöperating with the said fixed jaw, a sliding dog located beneath the teeth of the rack bar, an operating lever, an angle lever operatively connected with the said operating lever and with the said sliding dog, the
 95 said operating lever having a portion extended rearwardly beyond its connection with the angle lever, and a weight supported by said portion and serving to normally hold the operating lever in a position to cause the
 100 said sliding dog to be engaged with the teeth of the said rack bar.

2. A vise of the class described comprising a fixed jaw, a sliding rack bar, a jaw upon the said rack bar coöperating with the said
 105 fixed jaw, a sliding dog adapted for operation to actuate the rack bar to cause the jaw thereof to move toward the said fixed jaw, an angle lever pivoted at one end to the support for the fixed jaw and having its other
 110 end operatively connected with the said sliding dog, an operating lever operatively connected with the angle lever whereby upon movement of the latter in one direction sliding movement will be imparted to the said
 115 dog to move the rack bar in one direction, a guide rod, a pivot screw, and a weight connected by the said pivot screw to the said operating lever and provided with an eye portion slidably engaged with the said guide
 120 rod.

3. A vise of the class described comprising a fixed jaw, a sliding jaw, a lever operatively connected with the sliding jaw and adapted
 125 for operation to move the sliding jaw toward the said fixed jaw, the said lever having a foot-receiving portion provided with a ratchet face, and a spring pressed sliding dog yieldingly engaged with the said ratchet
 130 face and provided with spaced foot-engag-

ing fingers which are disposed at the sides of the said foot-engaging portion of the lever.

4. In a structure of the class described, a
5 bench having a fixed jaw, a sliding rack bar supported by the bench and having a jaw co-operating with the said fixed jaw, a sliding dog supported by the bench, a guide rod supported by the bench, an operating lever,
10 an angle lever pivoted at one end to the bench and operatively connected at its other end with the said sliding dog, a pivoted

weight supported by the controlling lever and slidably engaged with the said guide rod, the said operating lever having a 15 ratchet face formed thereon, and a dog co-operating with the said ratchet face.

In testimony whereof I affix my signature in presence of two witnesses.

ELMER E. THAYER.

Witnesses:

CHARLES B. NEUMAN,
CHARLES C. BRUGGE.