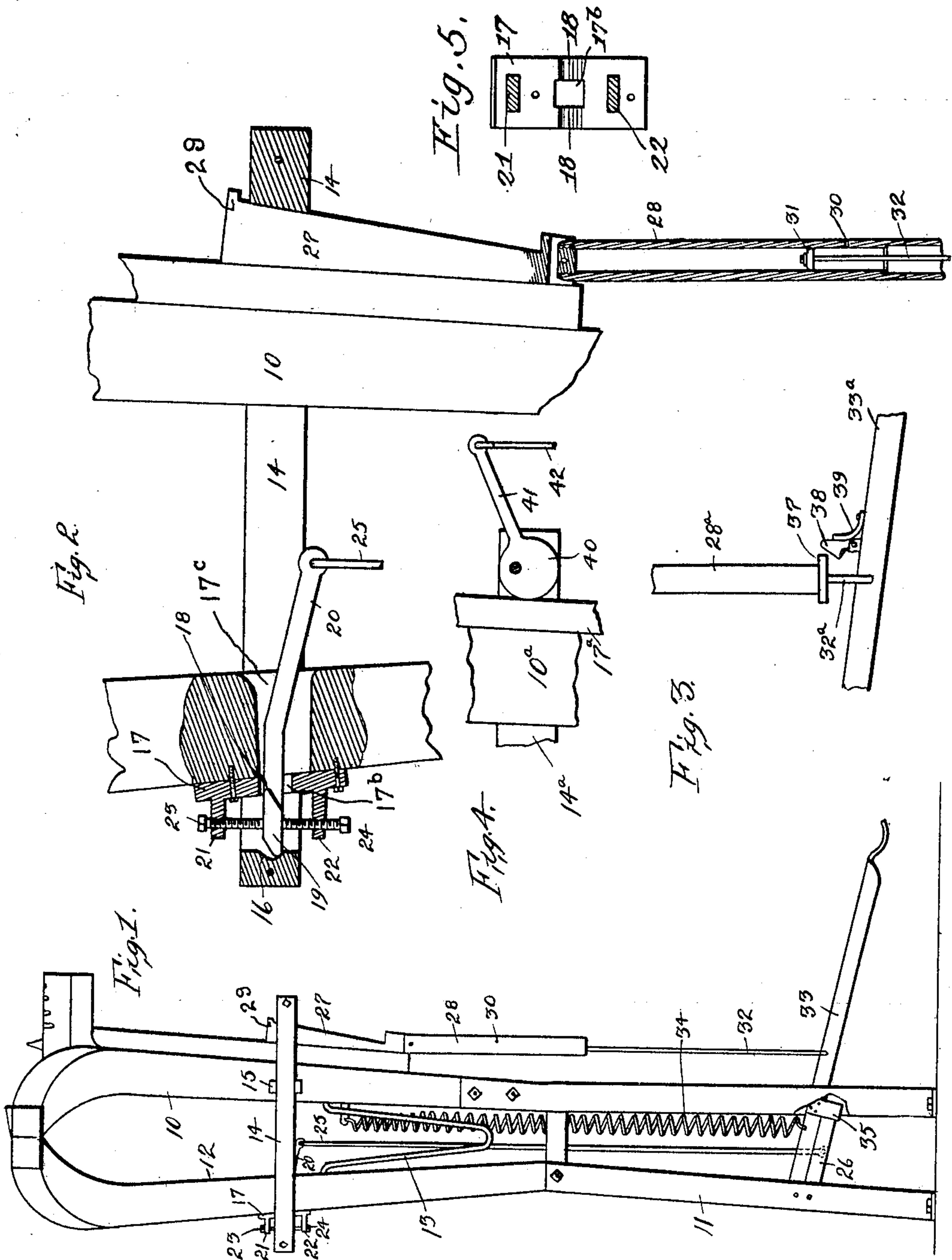


No. 887,471.

PATENTED MAY 12, 1908.

H. E. FULLER.  
PEDALLY OPERATED VISE.  
APPLICATION FILED FEB. 8, 1907.



Attest.  
R. E. Cabrock  
N. V. Winter.

Inventor: Harry Edgar Fuller,  
By J. E. Schwach  
Att.



# UNITED STATES PATENT OFFICE.

HARRY EDGAR FULLER, OF WINTERSET, IOWA.

## PEDALLY-OPERATED VISE.

No. 887,471.

Specification of Letters Patent.

Patented May 12, 1908.

Application filed February 8, 1907. Serial No. 356,913.

*To all whom it may concern:*

Be it known that I, HARRY EDGAR FULLER, a citizen of the United States of America, and resident of Winterset, Madison county, Iowa, have invented a new and useful Pedally-Operated Vise, of which the following is a specification.

The object of this invention is to provide improved means for approximating and locking together the jaws of a vise.

A further object of this invention is to provide improved means for pedally-operating devices for drawing together and locking the jaws of a vise.

My invention consists in the construction, arrangement and combination of elements hereinafter set forth, pointed out in my claims and illustrated by the accompanying drawing, in which—

Figure 1 is a side elevation of the complete device in position for practical use. Fig. 2 is a detail elevation, partly in section, showing the construction of certain parts hidden in Fig. 1. Fig. 3 is a detail elevation of a modified form of part of my device. Fig. 4 is a detail elevation, partly in section of a further modified form of parts of my device. Fig. 5 is a detail face view of a plate employed in the device.

In the construction of the devices as shown, the numeral 10 designates a fixed jaw which may be mounted, if desired, on a base or support 11 and extend upward therefrom. A jaw 12 is hinged to the lower end portion of the jaw 10 and extends upward approximately parallel therewith, the upper end portions of both turned inward and faced as desired, for clamping an object between them. A spring 13 is mounted between and impinges the jaws 10, 12 and tends to separate said jaws normally. A yoke, stirrup or shackle 14 surrounds and embraces the jaws 10, 12 intermediate of their ends and is supported loosely by engagement between lugs 15 arranged in pairs on opposite sides of the jaw 10. That end portion of the yoke 14 which embraces the jaw 12 has some freedom of movement vertically and a seat or notch 16, concave in cross-section, is formed in the inner face of the end portion of said yoke adjacent said jaw. A plate 17 is mounted on the outer face of the jaw 12 and extends through the yoke 14. Registering holes 17<sup>b</sup>, 17<sup>c</sup> (Fig. 2) are formed in the plate 17 and jaw 12 and a transverse notch or seat (Fig. 5) is formed in the outer face of the

plate 17 adjacent said holes. An eccentric latch 19 is mounted between the plate 17 and the adjacent end portion of the yoke 14 and the outer edge of said latch engages in the notch 16 and the inner edge 18 of said latch engages in the transverse notch or seat of the plate 17 on opposite sides of the hole 17<sup>b</sup> respectively. The latch 19 is formed with a handle 20 extending through the holes in the plate 17 and jaw 12 to the space between the jaws. Ears 21, 22 are formed on the plate 17 and adjusting screws 23, 24 are screwed through said ears and are adapted to determine and control the degree of oscillation of the cam-latch 19 between the ends of said screws. A rod 25 is fixed at its upper end to and depends from the inner end portion of the arm or handle 20 and extends downward between the jaws and is pivoted at its lower end to and intermediate of the ends of a lever 26, said lever pivoted at one end to a support, such as shown and indicated by the numeral 11. A wedge 27 is mounted, thin end downward, between the opposite end portion of the yoke 14 and the outer face of the jaw 10 and a tube 28, closed at its top and open at its lower end, is pivoted or hinged at its upper end to the lower end of the wedge. A lip or flange 29 is formed on the thicker end portion of the wedge 27 and is adapted to engage the upper face of the yoke 14 at times to retain the wedge against accidental removal. The tube 28 is formed with a chamber in its upper end of a given diameter and a chamber in its lower end of slightly greater diameter and an air-hole 30 is formed in said tube a little above the line of demarcation between said chambers.

A piston or sucker 31 is mounted in the tube 28 and a rod 32 is fixed thereto and extends outside the tube and is pivoted at its outer end intermediate of the ends of a foot-lever 33. The foot-lever 33 is pivoted or hinged to a support, such as 11, slightly above the point of pivoting of the lever 26 and a retractile spring 34 is connected at its lower end to the foot-lever between the rod 32 and point of hinging and extends upward between the jaws and is fixed at its upper end. A loop or strap 35 is fixed to and extends downward from the foot-lever 33 adjacent the outer end portion of the lever 26 and the opening through said loop is of such size as will admit the end portion of the latter lever.

In practical use the parts normally are as-



sembled as shown except that the foot-lever 33 and lever 26 incline upward from their pivots and the handle 20 inclines upward and the jaws are slightly separated. Consequently, the wedge 27 normally is at its uppermost limit of movement. An object to be acted upon is placed between the faces of the jaws 10, 12, foot pressure is applied to the outer end of the lever 33 and the rod 32 is depressed, thus drawing the piston 31 downward. The suction between the piston 31 and tube 28 is sufficient to move said tube and the wedge 27 downward and cause said wedge to move the yoke 14 and parts engaged thereby in such manner as to draw the jaw 12 toward the jaw 10 against the resilience of the spring 13. When the jaws have been drawn together into contact with the object between them so that further movement of the wedge is resisted, the piston 31 moves along the tube past the air-hole 30 and, the suction being relieved by the admission of air to the tube above the piston, said piston passes out of the smaller chamber and into the larger chamber of the tube. At about the same time the piston leaves the smaller chamber of the tube, the lever 33 in its downward movement engages and depresses the lever 26 sufficiently that it, acting through the rod 25, oscillates the handle 20 and eccentric latch 19 in such manner as to crowd the jaw 12 still closer to the jaw 10 and carry said latch past the center so that it locks the jaws in clamping position.

The hole 17<sup>b</sup> is only a little larger than the handle 20 and will not permit the passage of the latch 19 through it. It is the function of the screws 23, 24 to center the latch and hold it in proper position for the proper seating of opposite edges of said latch in the grooves, notches or seats provided for them and yet permit said latch to oscillate, said screws also serve as a fulcrum for the oscillation of the latch and together with ears 21, 22 and plate 17 connect said latch to the jaw 12. The tension of the eccentric latch when carried past the center is sufficient to overcome the resilience of the spring 34 and the loop or strap 35 engages the outer end portion of the lever 26 and the foot-lever 33 is held downward temporarily.

It will be observed that the levers 26 and 33 are fulcrumed one above the other and that one end of the lever 26 extends only slightly within the loop or strap 35. The lever 33 moves a greater distance than the lever 26 need to move and hence during a portion of such movement the loop or strap 35 moves away from and independent of the lever 26. When it is desired to remove the object from the jaws an initial upward movement is given to the foot-lever 33 by the toe of the operator sufficient to cause the shaft 35 to lift the lever 26, rod 25 and handle 20 and oscillate the eccentric latch 19 to its

former position, thus releasing and permitting the spring 34 to raise the lever to its initial position.

In the ascent of the lever 33 and rod 32, the piston 31 enters the smaller chamber in the tube 28 and passes beyond the air-hole 30 and in so doing, the piston lifts the tube and wedge 27 and permits the jaws to separate. In the upward stroke of the piston 31, the smaller chamber in the tube 28 provides an air-cushion having the usual functions. The degree of separation of the jaws is dependent on the taper of the wedge 27 and the eccentricity of the latch; but the latter should be very slight as it serves usually the single purpose of locking the jaws together after they have been brought into contact with an object by movement of the wedge.

In Fig. 3 I show a tube 28<sup>a</sup> adapted to receive and guide a piston, not shown, on the upper end of a rod 32<sup>a</sup> pivoted to a lever 33<sup>a</sup>. An angular nut 37 is threaded on the lower end portion of the tube 28<sup>a</sup> and is adapted to be engaged at times by a detent 38 pivoted on the lever 33<sup>a</sup> and spring pressed, by a spring 39, toward said nut. The nut 37 serves as a lateral projection from the tube 28<sup>a</sup> to engage the detent 38 and permit said detent to draw the tube downward in the descent of the lever 33<sup>a</sup>, and any equivalent engaging means between said lever and tube may be employed without departing from the spirit of my invention. The tube 28<sup>a</sup> is adapted to be connected to the wedge or other jaw-approximating means, and draw the same downward until the further approach of the jaws is obstructed by force sufficient to overcome the engagement between the detent 38 and nut 37 or its equivalent, at which time the spring 39 yields and permits said detent to be disengaged from the tube. Further downward movement of the lever 33<sup>a</sup> acts on the jaw locking means as above described.

In Fig. 4 I show a yoke 14<sup>a</sup> through which a jaw 10<sup>a</sup> extends loosely. An eccentric 40 is pivoted in one end portion of the yoke 14<sup>a</sup> and engages the outer face of the jaw. An arm 41 is formed on the eccentric 40 and a rod or draft device 42 leads from the extremity of said eccentric. It is proposed to substitute the eccentric 40 for the wedge 27, if desired, and the arm 41 and draft device 42 form a connection between said eccentric and the lever 33 or 33<sup>a</sup> equivalent to the tube 28 and rod 32 and equivalent devices. In the descent of the draft device 42 the eccentric engages and moves the jaw 10<sup>a</sup> toward the opposite jaw.

I claim as my invention—

1. A vise, comprising jaws, a yoke embracing said jaws, a wedge mounted for reciprocation between one end of said yoke and one of the jaws, and a latch acting between



the opposite end of said yoke and the other jaw.

2. A vise, comprising jaws, a yoke embracing said jaws, a wedge mounted for reciprocation between one end of said yoke and one of the jaws, and an eccentric latch acting between the opposite end of said yoke and the other jaw.

3. A vise, comprising jaws, a yoke embracing said jaws, a wedge slidably mounted between one end of said yoke and one of the jaws, a latch mounted between the opposite end of the yoke and the other jaw, levers mounted for oscillation, and connections between said levers and the wedge and latch respectively.

4. A vise, comprising jaws, a yoke embracing said jaws, a wedge slidably mounted within the yoke and against one of the jaws, a tube hinged to said wedge, a piston arranged for travel in said tube, a rod on said piston, a lever connected to said rod, and means for latching said yoke to the other jaw.

5. In a vise, a fixed jaw, a movable jaw, a yoke embracing said jaws, means for moving said yoke and movable jaw relative to the other jaw, an eccentric latch between said yoke and movable jaw, a lever and connections between said lever and moving means and connections between said lever and eccentric latch.

6. In a vise, movable jaws, a yoke, pedally-operated mechanism for moving said yoke relative to said jaws, and an eccentric latch acting between said yoke and jaws, said eccentric latch being supplemental to and operated by the pedally-operated mechanism.

7. In a vise, jaws, a yoke embracing said jaws, a wedge slidably mounted between one end of said yoke and one of the jaws, a tube having various diameters fixed to said wedge, a piston mounted for longitudinal movement in said tube and a foot lever connected to said piston, said tube formed with a port intermediate of the ends of said tube.

8. In a vise, jaws, a yoke embracing said

jaws, adjusting screws carried by one of the jaws, an eccentric latch mounted between one of the jaws and one end of said yoke, said latch also located between and in engagement with said adjusting screws, means for moving one jaw toward the other and means for oscillating said eccentric latch.

9. A vise, comprising jaws, a yoke embracing said jaws, a wedge between one end of said yoke and one jaw, a latch between the opposite end of said yoke and the other jaw, levers fulcrumed one above the other, a loop on one of said levers adapted to engage at times with and lift the adjacent end of the other lever, and rods connecting said levers respectively to the wedge and latch.

10. In a vise, movable jaws, pedally-operated wedge devices mounted for reciprocation and adapted to move one of said jaws toward the other, means for releasing said wedge devices, and an eccentric latch for locking said jaws together.

11. In a vise, movable jaws, a yoke embracing said jaws, a wedge operating between one end of said yoke and one of the jaws, detachable means for moving said wedge, said detachable means operated by resistance in approximating the jaws, and means for latching said jaws in approximated position.

12. A vise, comprising jaws, jaw-approximating mechanism acting thereon, jaw-locking mechanism acting thereon, a foot-lever, connections between said foot-lever and the jaw-approximating mechanism and connections between said foot-lever and the jaw-locking mechanism, whereby throughout part of a stroke of said lever the jaws are brought together and throughout the remainder of the stroke of said lever the jaws are locked in closed position.

Signed by me at Des Moines, Iowa, this sixteenth day of January, 1907.

HARRY EDGAR FULLER.

Witnesses:

S. C. SWEET,

ALFRED ANDERSON.