May 30, 1933. W. O. THEWES 1,911,538

CHAIN VISE

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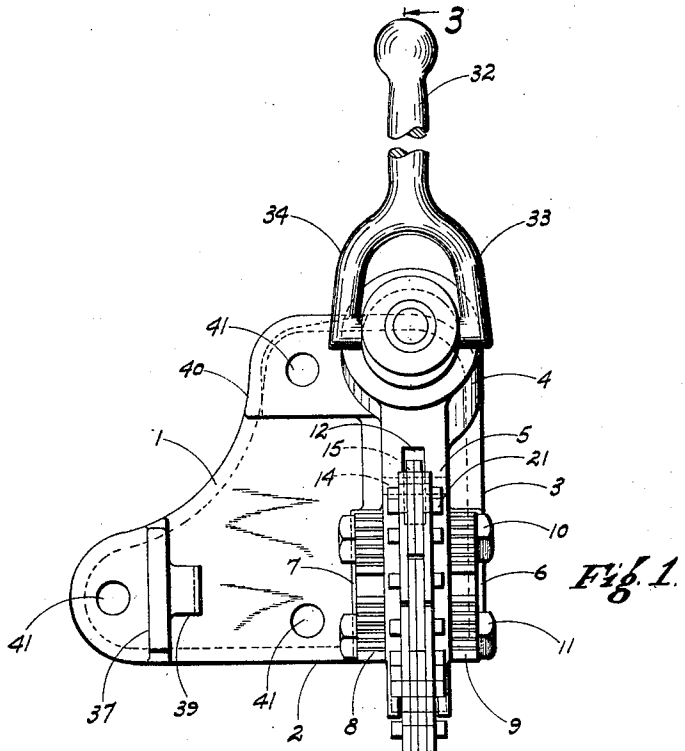


Fig. 1.

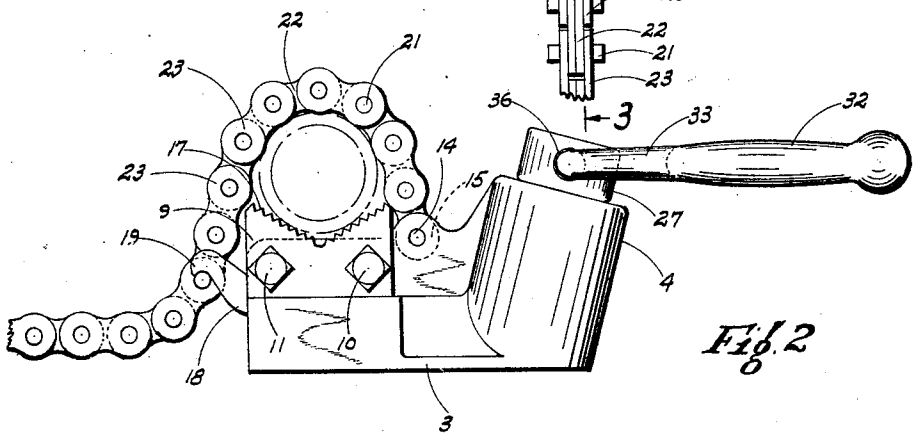


Fig. 2

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CHAIN VISE

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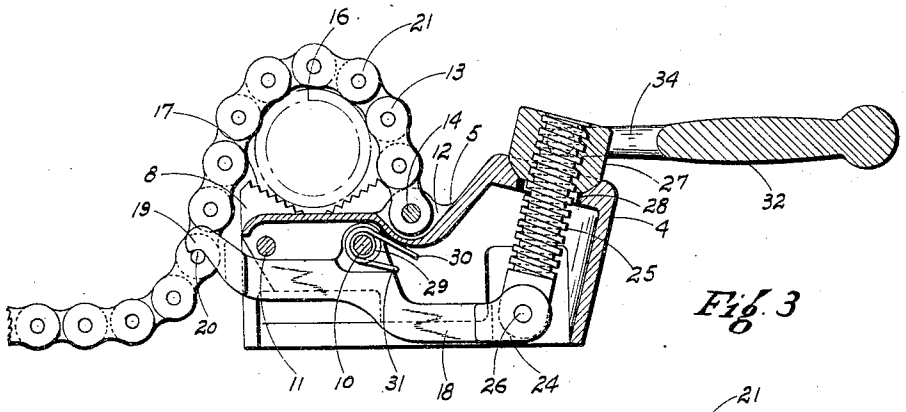


Fig. 3

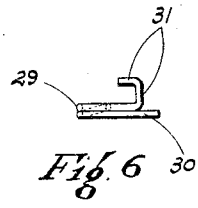


Fig. 6

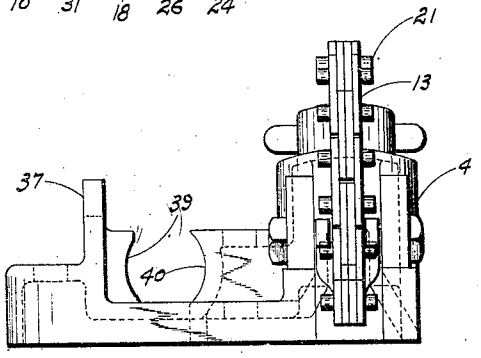


Fig. 4

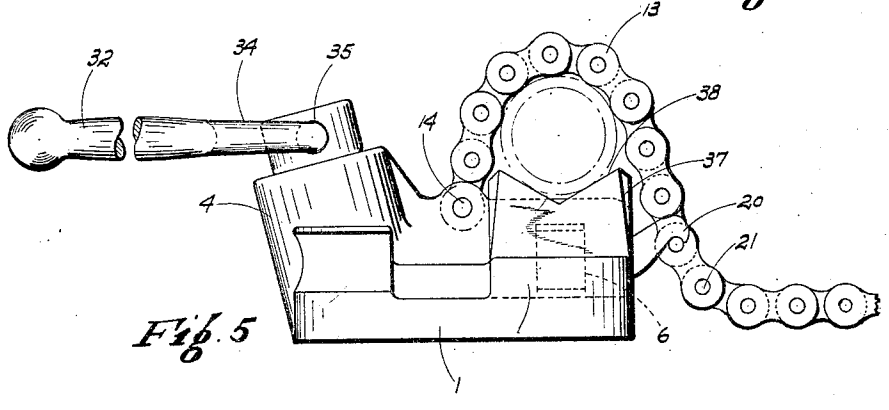


Fig. 5

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UNITED STATES PATENT OFFICE

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CHAIN VISE

Application filed November 10, 1930. Serial No. 494,594.

This invention relates to improvements in vises, and more particularly relates to vises of the type which employ a chain to draw the work which is to be held, toward a pair of gripping jaws and which vises are commonly known as chain vises.

One of the objects of this invention is to provide a vise which may be more securely seated upon a bench and when secured thereon, will have no portions overhanging the edge of the bench.

Another object of the invention is to provide a vise wherein the moving parts are shielded from foreign objects.

Another object of the invention is to provide a vise that may be economically manufactured, requiring but relatively few machining operations to make the same.

Still other objects, and the invention itself will become more apparent from the following description of an embodiment thereof, in which description, reference may be had to the accompanying drawings.

In the drawings:

Fig. 1 is a plan view of the vise embodied in this invention;

Fig. 2 is a side elevational view thereof;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is an end elevational view of the vise;

Fig. 5 is a side elevational view taken on the opposite side of that of Fig. 2;

Fig. 6 is a plan view of a spring used in the invention.

The vise comprises generally a hollow cast iron or steel base 1. The base is of irregular shape, two adjacent sides 2 and 3 however, forming a right angle adapted to lie along the corner of a bench or the like.

A substantially cylindrical upstanding hollow boss 4 is formed in the base adjacent the side 3 and is adapted to guide and provide a thrust for an adjusting nut and screw later more fully described.

Extending between the boss 4 and the edge 2 is a hollow web 5. A pair of seats 6 and 7 are formed on the side of the web and a pair of gripping jaws 8 and 9 are bolted in place on the seats against the side of the web by bolts 10 or 11 which extend through the web and jaws.

A slot or recess 12, is provided in the top portion of the web, intermediate the gripping jaws and the boss 4. The end of a chain 13 may be secured between the walls of the slot by a pin 14 which extends through aligned apertures in the sides of the slot and through an end link 15 of the chain.

As previously stated, the object, which might be a pipe 16, Fig. 3, is gripped by the chain holding the same into contact with the jaws, the faces 17 of which are serrated. One end of the chain being secured in the slot 12, the other end passed over the object and pulled down by a lever 18. The lever 18, which is used to exert a pulling pressure upon the chain, is disposed in the channel or housing formed underneath the base by the parallel side walls of the web 5. It is pivotally held between the walls by the bolt 10 which extends through the web 5 and the jaws. The lever is of irregular shape, as best shown in Fig. 3, the free end 19 is forked and the lower surface of the fork is provided with notches 20 which are adapted to engage the pins 21 of the chain. The pins 21 which secure the links 22 and 23 of the chain together, project beyond the sides of the chain in such a manner that the fork 19 may straddle the chain and the ends of the pins 21 engage the notches 20. In this position when the lever is rotated on the bolt 10, in a counter-clockwise direction, as viewed in Fig. 2, the chain is pulled downward. The other end of the lever is provided with a clevis 24 in which a threaded operating screw 25 is pivotally secured by a pin 26. The screw 25 extends upward from the clevis through the cylindrical boss 4. An adjusting nut 27 is threaded upon the screw 25 and is adapted to move the screw. The nut 27 bears against a spherical seat upon the inturned flange 28 at the top of the cylindrical boss 4 to tend to pull the screw upward through the boss which action rotates the lever counter-clockwise. When the lever is released by unscrewing the nut the lever is returned to position by a coil spring 29, which encircles the

bolt 10 and has a free end 30, which engages the top of the channel formed by the web, and a hooked end 31 which embraces the lever.

The nut 27 may be rotated by a lever 32 which has a pair of arms 33 and 34 swivelably engaging the nut by their inturned ends in apertures 35 and 36 disposed on opposite sides of the nut.

An additional support for the pipe or round object is provided by an upstanding boss 37 which is provided with a V-shaped groove 38 in alignment with the jaws 8 and 9. The base of the boss 37 is provided with a concave face 39.

Another upstanding boss is provided adjacent to the cylindrical boss 4 and has a rounded groove 40. It may thus be seen that a pipe can be inserted in such a manner that the rounded groove 40 acts as a fulcrum and the pipe or an intermediate portion thereof rests against the face 39. When pressure is exerted on the free end of the pipe the same may be bent in the usual manner.

At suitable positions the base is provided with three apertures 41 for bolting the vise to a bench.

The operation of the device is as follows: The object to be held is placed upon the gripping jaws 8 and 9. The chain 13 is passed over the object, drawn as tight as possible and hooked on the forked end 19 of the lever 18. By manipulating the lever 32, the nut 27 is screwed to draw the screw 25 upwards thereby rotating the lever 18 counter-clockwise sufficiently to pull the end of the chain 13 downward. This pulls the object tightly down to the gripping jaws 8 and 7 and holds it securely thereto.

To release the object the nut 27 is unscrewed by the use of the lever 32. The chain 13 becomes loosened because of the action of the spring 29 which urges the lever 19 to the retracted position, wherein the chain may be removed and the object lifted off of the jaws.

It may readily be seen that in a vise constructed as described, the base of the vise requires little or no machining before assembling the component parts.

It may also be seen that a vise of this type may be mounted on the bench so that there are no portions overhanging the edge of the bench.

The housing construction provided for by the hollow web 5 of the base tends to keep out particles such as dirt, iron filing and the like, out of the operating parts.

Having thus described the invention, I am aware that numerous and extensive departures may be made therefrom, but without departing from the spirit of the invention or the scope of the appended claims.

I claim:

1. A chain vise comprising a base, a housing extending upward from the base, a pair of jaws secured to the base, a lever pivotally secured to the walls of the housing and having a forked end extending beyond the confines thereof, a threaded member pivotally secured to one end of said lever and extending upwardly through the housing, a seat disposed upon the housing, the boundary of the seat defining an aperture through which the threaded screw extends, a pressure nut and lever disposed on the threaded screw, said nut being seated on the seat and adapted to exert thrust upon said screw to move said lever and close said aperture, and a chain adapted to cooperate with the jaws to hold an object secured to the base at one end and adapted to be engaged at an intermediate point by said forked end.

2. A vise comprising a hollow housing having one or more gripping jaws mounted on said housing, a chain adapted to co-operate with said jaws and having one end connected to said housing, a lever fulcrumed to the housing within the latter, one end of said lever being adapted for one-way engagement with said chain, an operating screw also located within the housing and connected to the opposite end of said lever, a thrust nut for said screw, means for rotating said nut to oscillate said lever in one direction and draw said chain, and means for normally urging said lever to retracted position.

3. A vise comprising a hollow housing having a top wall which is contoured to provide a boss at one side of the housing, a substantially spherical bearing seat formed in said boss, one or more gripping jaws mounted on said housing, a chain adapted to co-operate with said jaws and having one end pivotally connected to said housing, a lever fulcrumed to the housing within the latter, one end of said lever being adapted for engagement with said chain, an operating screw connected to the opposite end of said lever, a pressure nut on said screw, said nut having bearing in said seat, and means for actuating said nut.

4. A vise comprising a hollow housing having a top wall which is contoured to provide a hollow boss at one side of the housing, a substantially spherical bearing seat formed in said boss, one or more gripping jaws mounted on said housing, a chain adapted to co-operate with said jaws, a lever fulcrumed to the housing within the latter, one end of said lever being adapted for one-way engagement with said chain, an operating screw connected to the opposite end of said lever, a pressure nut threaded on said screw and having a thrust bearing portion adapted to work in said seat,

means for rotating the nut to actuate the lever and draw said chain, and means for normally urging said lever to retracted position.

5. A vise comprising a hollow housing having a top wall which is contoured to provide a hollow boss at one side of the housing, a substantially spherical bearing seat formed in the top of said boss, one or more gripping jaws mounted on the housing, a chain adapted to co-operate with said jaws and having one end thereof pivotally secured to said housing, a lever fulcrumed within the housing, one end of said lever being adapted for one-way engagement with said chain, an operating screw connected to the opposite end of said lever and projecting upwardly through said bearing seat, a pressure nut threaded on said screw and having a lower thrust bearing portion adapted to work in said seat, a handle connected to said nut for rotating the latter to actuate the lever and draw the chain, and a spring for normally urging the lever to retracted position.

In testimony whereof I hereunto affix my signature this 30th day of October, 1930.

WILLIAM O. THEWES.