July 17, 1956 C. R. PETERSON 2,754,708

VISE FOR IRREGULARLY SHAPED OBJECTS

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Fig. 1

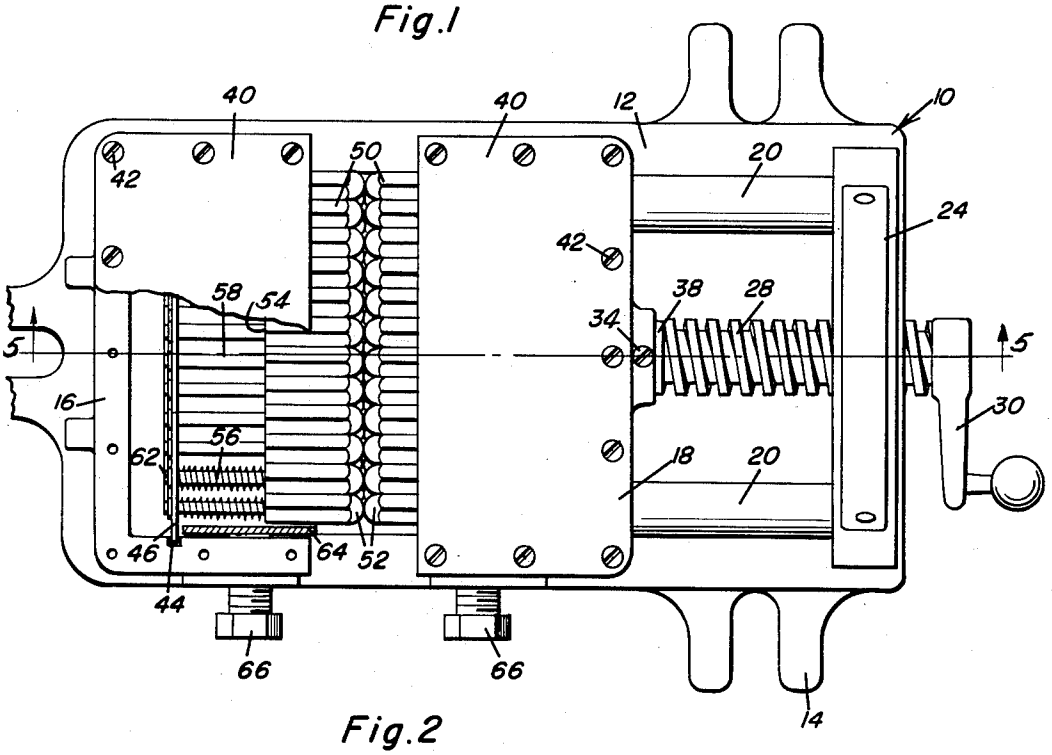


Fig. 2

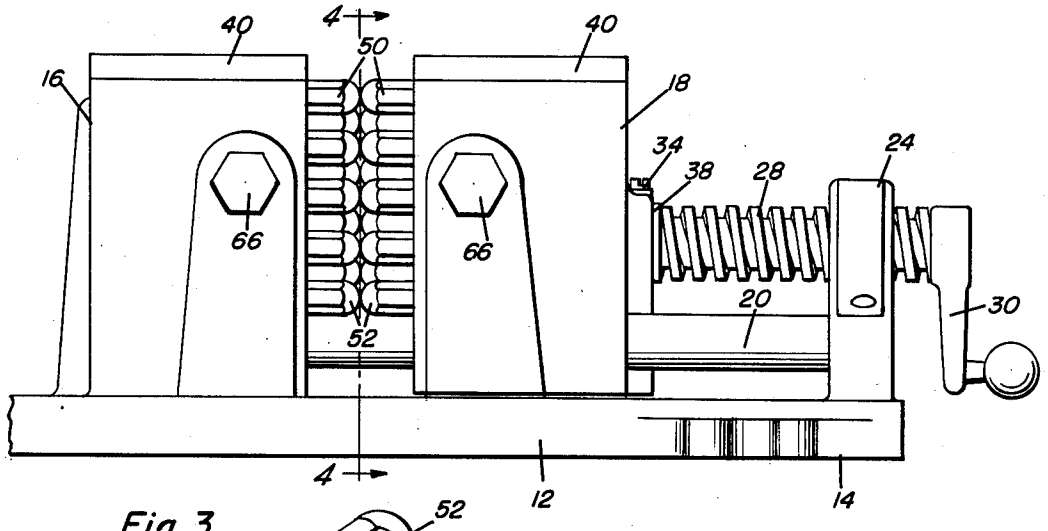
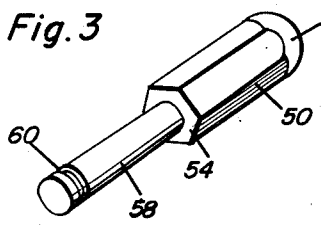


Fig. 3



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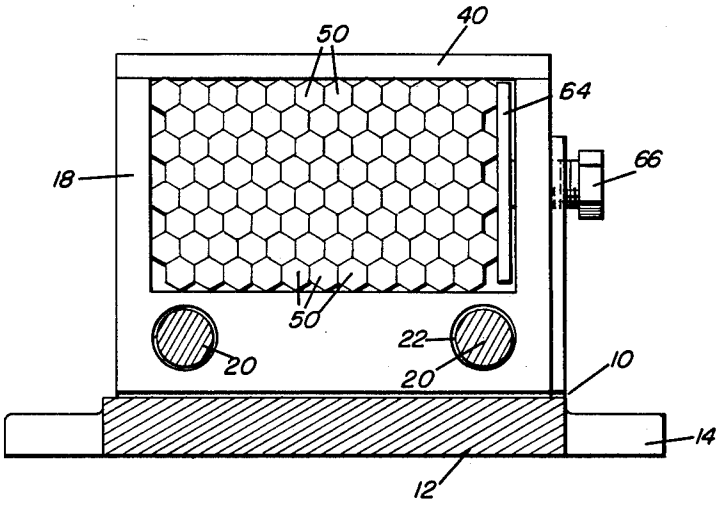
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Fig. 4



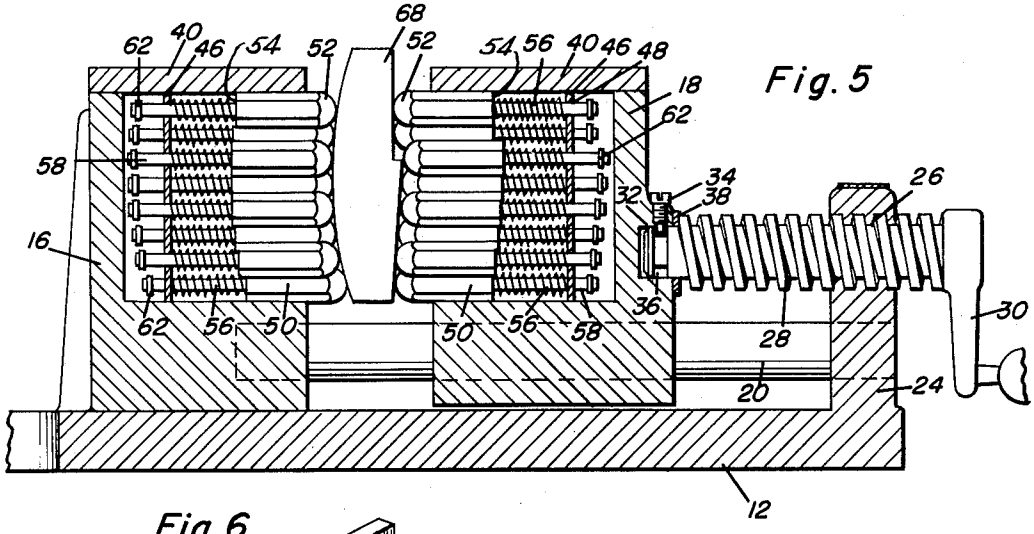
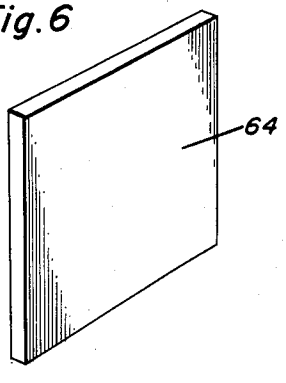


Fig. 5

Fig. 6



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United States Patent Office 2,754,708 Patented July 17, 1956

2,754,708

VISE FOR IRREGULARLY SHAPED OBJECTS

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Application August 25, 1953, Serial No. 376,415

2 Claims. (Cl. 81—38)

This invention relates to vises and more specifically provides a vise which will hold irregularly shaped objects while some work is being performed on such objects.

An object of this invention is to provide a vise having opposed jaws for gripping irregularly shaped objects over a substantial area thereof.

A novel object of this invention is to provide a vise wherein the jaws automatically conform to the shape of the object to be held and may be easily secured in this position for repeat gripping operations.

Yet another object of this invention is to provide a vise which may hold irregular shaped objects and which is inexpensive in manufacture, easy to adjust, and lends itself to a minimum of maintenance and repair.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a top plan view of the vise of this invention with a portion of one of the top plates broken away to show details of the opposing jaw members;

Figure 2 is a side elevation of the structure of Figure 1 showing the jaw-operating means and the object-gripping plungers in closed position with no work therebetween;

Figure 3 is a detail perspective view showing the structure of a single work-engaging plunger;

Figure 4 is a transverse, vertical section taken along section line 4—4 of Figure 2 and looking in the direction of the movable jaw;

Figure 5 is a longitudinal, vertical section taken along the section line 5—5 of Figure 1, but showing an irregular shaped object clamped between the jaws and showing the details of the object-engaging plungers and their actuating means; and

Figure 6 is a detail perspective view showing the movable plate which engages the plungers and locks them in adjusted position.

Referring now more specifically to the drawings, it will be seen that the numeral **10** generally designates the vise of this invention having a base **12** with slotted attaching lugs **14** for securing the vise **10** to a suitable supporting surface.

As best seen in Figures 1, 2, 4, and 5, the base **10** is provided with an upstanding stationary jaw member **16** in the shape of a box-like member and a movable jaw **18** of a similar shape with the open edges of the box-like jaws **16** and **18** facing each other. The movable jaw **18** is slidably supported by a pair of horizontal guide rods **20** which are received in suitable bearing apertures **22** adjacent the lower end of the movable jaw **18**. At the extreme end of the base **12** is an upstanding lug **24** having an internally threaded aperture **26** for receiving a screw threaded member **28** having an operating handle **30** on the exterior end and projecting beyond the base **12**. The inner end of the screw member **28** is rotatably received in a socket **32** in the movable jaw **18**. The socket **32** is provided with a

set screw **34** which is received in a peripheral groove **36** of the screw threaded member **28** and an abutment washer **38** is secured between the end of the screw threads and the shoulder surrounding the socket **32** for pushing and pulling the movable jaw **18** towards the stationary jaw **16**. The guide rods **20** are rigidly secured to the upstanding lug **24** at one end and at their other end to the stationary jaw **16** and the movable jaw **18** is moved along the guide rods **20** by turning the handle **30**.

As seen in the drawings each of the jaws **16** and **18** are provided with cover plates **40** secured to the upper end of the jaws by suitable screws **42**. As best seen in Figure 1, the box-like jaws **16** and **18** are provided with an elongated notch **44** in each side thereof adjacent the rear wall of the box-like jaws **16** and **18** and vertically slidable in these notches **44** is a plunger holding plate **46** which extends from the bottom of the box-like structure to the top thereof and is held therein by the cover plates **40**. Each of the guide plates **46** is provided with a plurality of guide apertures **48** in spaced horizontal rows. Slidably received in each of the apertures **48** is a reduced portion **58** of a work-engaging plunger or pin **50** having a rounded end portion **52** for contacting the object to be clamped and a shoulder **54** spaced from the end portion **52** and acting as a stop member for a compression coil spring **56** which is interposed between the shoulder **54** and the guide plate **46** and surrounding the reduced portion **58** of the pin **50**. The end of the pin **50** remote from the contact end **52** is provided with a peripheral notch **60** for receiving a split ring **62** thereon which limits the outward movement of the pin **50** in an obvious manner.

As clearly seen in Figure 3, the work-engaging pins **50** are polygonal in shape and as shown preferably hexagonal and as best shown in Figures 1 and 4 a movable plate **64** is provided on the interior side of the jaws **16** and **18** and abutting the work-engaging pins or plungers **50**. Threaded through the sides of the jaws **16** and **18** is a bolt **66** for engaging the movable plate **64** and as the bolts **66** are screwed inwardly the plate **64** engages the pins **50** and by exerting side force thereon frictionally retains the pins in any adjusted position.

The operation of the device will be readily understood. The vise **10** is mounted upon any suitable supporting surface through the use of mounting lugs **14** and the jaws **16** and **18** are separated by manipulating the handle **30**. An irregularly shaped object **68** is placed between the jaws **16** and **18** and by manipulating handle **30**, the object-engaging pins or plungers **50** come in contact with the object **68** and as the movable jaw **18** proceeds toward stationary jaw **16** the pins are moved inwardly towards the inner surface of the jaw a substantial amount until the pins **50** engage the object **68** substantially about its entire surface. The bolts **66** are then turned inwardly to move the pressure plates **64** inwardly thereby clamping the pins **50** in the relationship which conforms to the contour of the work object **68**. As may be seen the work object **68** is thus securely clamped between the opposing pins or plungers **50** and after the work has been completed another object of similar contour may be held securely and the process repeated as often as desired and when it is desired to hold a workpiece having a different contour the bolts **66** may be loosened and the setting-up process repeated.

Obviously, by the removal of the cover plates **40**, the entire assembly of work-engaging pins and guide plate may be removed from the box-like jaws **16** and **18** for easy cleaning or repair. This vise may be used wherever it is desired to hold irregularly shaped objects and finds its greatest utility wherein similar but irregularly shaped objects are to be successively clamped. The vise may be made of any suitable material and the work engaging pins may be constructed of any desirable strength and size de-

pending upon the nature of the work to be held and other well-known equivalents may be substituted for a specific element shown in this embodiment.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed as new is as follows:

1. A vise comprising a base member having a stationary jaw projecting upwardly from one end and a movable jaw slidable on said base and means to move said movable jaw, each of said jaws comprising a hollow block having facing openings, a plurality of movable work-engaging members slidably carried in said block, a movable pressure plate in each block adjacent one side wall thereof, and pressure-applying means projecting through said side wall of each block and operable to clamp the adjacent pressure plate against said work-engaging members to lock each of them in work-engaging position, each of said blocks being provided with an apertured plate spaced from a rear wall of each block for guiding each individual member, and spring means disposed between said guide plate and each member to urge each of the members into work-engaging position whenever said pressure plate is in a non-clamping position.

2. The structure as defined in claim 1 wherein said members are each provided with a shoulder and wherein said spring means comprises a coil spring surrounding a portion of each of said members, said coil spring having one end abutting said shoulder and having an opposite end abutting said guide plate.

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