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C. J. LINDGREN.

VISE.

APPLICATION FILED MAR. 21, 1904.

Fig. 1.

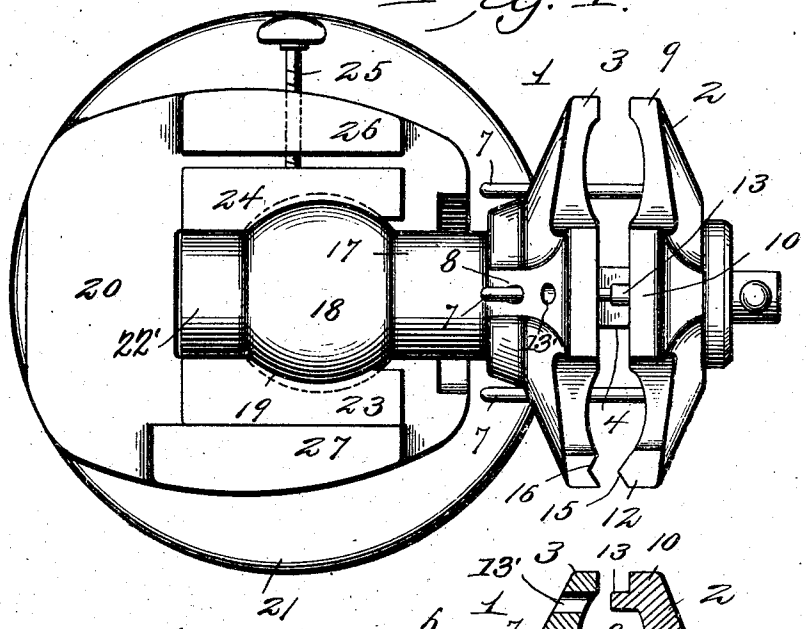


Fig. 2.

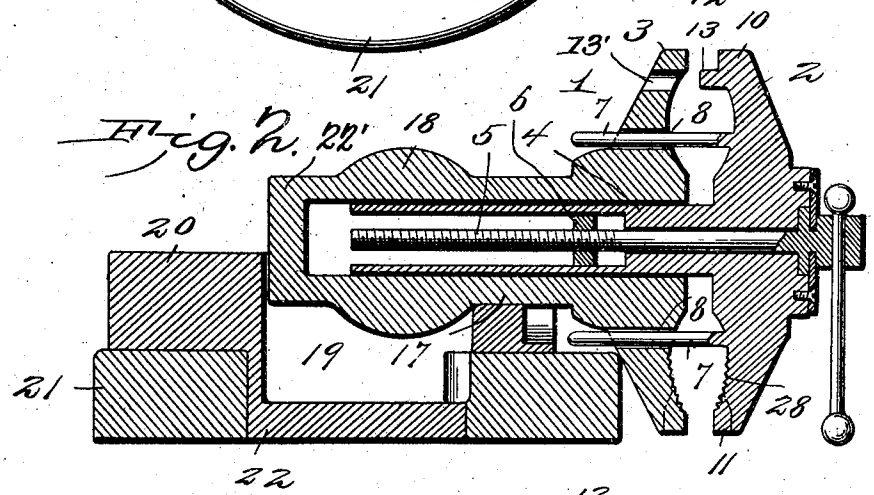
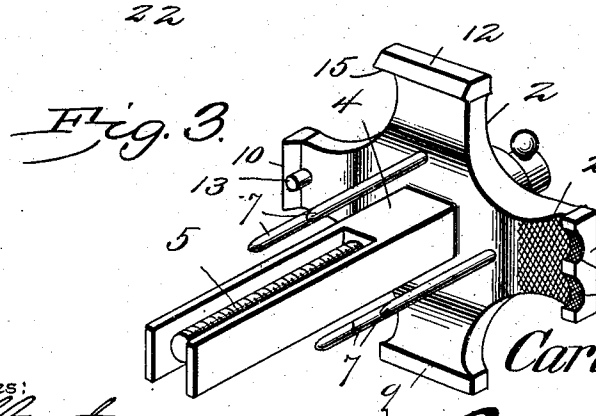


Fig. 3.



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No. 785,010. Patented March 14, 1905.

UNITED STATES PATENT OFFICE.

CARL JON LINDGREN, OF WARREN, PENNSYLVANIA.

VISE.

SPECIFICATION forming part of Letters Patent No. 785,010, dated March 14, 1905.

Application filed March 21, 1904. Serial No. 199,216.

To all whom it may concern:

Be it known that I, CARL JON LINDGREN, a citizen of the United States, residing at Warren, in the county of Warren and State of Pennsylvania, have invented a new and useful Vise, of which the following is a specification.

This invention relates to vises.

The object of the invention is to present in compact and practical form a plurality of tool elements that heretofore generally have been separate and distinct implements and to combine the elements in such manner that without loss of time the desired tool may be positioned for accomplishing the work desired.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists, generally stated, in a vise comprising a pair of clamping members, one of which, as usual, is movable to and from the other, and both members being bodily movable and capable of being clamped in any position from one that is horizontal to one that is vertical. Each clamping member carries one element of each of the implements—in this instance an ordinary vise-jaw, a punching-jaw, a pipe-vise jaw, and a bending-jaw. Each of the elements on one member is a counterpart of the like element on the other member with the exception of the punching implement and the bending implement, as with the former one of the jaws carries the punch proper and the other is provided with an orifice or matrix to receive it, and with the latter one of the jaws is provided with a wedge-shaped face to engage a similarly-shaped seat formed in the other jaw to effect angle-bends.

Of course it will be understood that the invention is not to be limited to a means for forming angle-bends alone, as any other bend desired may be secured by properly shaping the opposing faces of the bending-jaws for the purpose.

Combined with one of the clamping members, in this instance with the movable member, is a series of pintles or pins adapted to engage orifices in the other jaw, thus to cause the clamping members to be held from turning or from any lateral or twisting movement when in use. The shank of the movable clamping member consists of two arms arranged in parallelism, and the shank as a whole is rectangular in cross-section, and these arms are adapted to straddle a nut rigidly associated with the stationary clamping member, the nut being engaged by a screw carried by the movable member and disposed between the shank-arms and the screw being held against longitudinal movement with relation to the movable member in any manner common to such structures.

The fixed or stationary clamping member, by which is meant the member that has no movement to effect clamping, is carried by a stem or arm provided intermediate of its ends with a ball to engage a socket formed in a bed-piece, the bed-piece being, by preference, revolubly mounted upon a base which may be secured in any preferred manner to a bench, the bed, by preference, being provided with a centrally-disposed downward-projecting boss to engage an orifice in the base; but, if preferred, the base may be dispensed with, as also the boss upon the bed, and the latter may be directly secured to the bench. The ball, as above stated, works in a socket formed in the bed, and that portion of the arm projecting beyond the ball or its terminal constitutes a stop for limiting the upward movement of the vise or, in other words, to check it when it reaches a vertical or an approximately vertical position. To clamp the vise at any desired adjustment with relation to the bed, the latter is provided with a clamping element and means for forcing it inward against the ball, the said clamping element constituting, in effect, a portion of the socket.

Under the arrangement shown a workman has at his disposal a multiple tool which combines in a practical manner a number of implements that are constantly employed by artisans and which may be readily presented for use as desired. As will hereinafter appear, the pipe-vise is adapted for holding the pipe in a horizontal or in a vertical position, thus to permit cutting off of lengths of the pipe by an ordinary cutting-tool or the cutting of threads thereon.

Various and other novel details of construction will hereinafter be fully described and claimed.

In the accompanying drawings, forming a part of the specification, and in which like characters of reference indicate corresponding parts, there is illustrated one form of embodiment of the invention capable of carrying the same into practical operation, it being understood that the elements therein exhibited may be varied or changed as to shape, proportion, and exact manner of assemblage without departing from the spirit thereof, and in these drawings—

Figure 1 is a view in top plan, showing the vise disposed in horizontal position. Fig. 2 is a view in vertical longitudinal section. Fig. 3 is a detached detail view of the movable clamping member of the vise.

Referring to the drawings, 1 designates generally the vise, which comprises two clamping members 2 and 3, the member 2 in this instance being adapted to be moved to and from the member 3 to effect clamping of articles between the various implements to be described. The clamping member 2 has combined with it in any preferred manner a shank 4, which is shown as composed of two arms disposed in parallelism and spaced apart a sufficient distance to receive the screw 5, the shank being rectangular in cross-section and its arms being adapted to straddle a nut 6, positioned in any suitable manner upon the stationary member, the coaction between the shank members and the nut being such as to prevent any twisting or torsional movement of the movable member with relation to its mate under the use of the vise. The screw is combined with the movable vise member in the usual manner, which will permit of its being rotated without having any longitudinal movement, and as this is a common and well-known expedient in all vises illustration or further description thereof is deemed unnecessary. To relieve the shank of undue strain due to excessive torsional pressure exerted on the vise, a plurality of pintles 7 are employed, which in this instance are made rigid with the movable vise member and are adapted to project through suitable orifices 8 in the stationary member.

Each clamping member carries one element of each of the implements—in this instance an ordinary vise-jaw 9, a punching-jaw 10, a pipe-vise jaw 11, and a bending-jaw 12. Each of the elements on one member is a counterpart of the like element on the other member with the exception of the punching implement and the bending implement, as with the former, one of the jaws (in this instance that on the movable vise member) carries a punch 13, and the other member is provided with an orifice or matrix 13′ to receive the punch, and in the latter, one of the jaws, in this instance that on the movable member, is provided with a wedge-shaped face 15 to engage a similarly-shaped seat 16 in the other jaw or that carried by the stationary member. Of course it is to be understood that the invention is not to be limited to means for forming angle-bends alone, as any other bend desired may be secured by shaping the opposing faces of the bending-jaws for the purpose. It is further to be understood that the invention is not to be confined to a vise embodying but four implements, as it will be apparent that the number may be increased, if found necessary or desirable, for effecting other results and still be within the scope of the invention.

Combined with the stationary clamping element in any suitable manner, as by being welded, brazed, or shrunk thereto or by being formed integral therewith, is a stem or arm 17, which is provided intermediate of its ends with a ball 18 to engage a socket 19, formed in a bed-piece 20, the latter being, by preference, revolubly mounted upon a base 21, which may be secured in any preferred manner to a bench, the bed in this instance being provided with a centrally-disposed downward-projecting boss 22 to engage a socket in the base 7; but, if preferred, the base may be dispensed with, as also the boss upon the bed, and the latter may be directly secured to the bench. The ball, as stated, works in a socket formed in the bed, and that portion of the arm projecting beyond the ball or its terminal constitutes a stop 22′ for limiting the upward movement of the vise or, in other words, to check it when it reaches a vertical or an approximately vertical position. To clamp the vise at any desired angle of adjustment with relation to the bed, the latter is provided with a pair of clamping elements 23 and 24, the former of which is rigid and the latter being adapted to be moved into clamping engagement with the ball through the medium of the screw 25, which passes through an abutment 26 on the bed, a similar abutment 27 serving to brace the fixed clamping element 23 against yielding. It will be readily understood, of course, that the provision of the ball-and-socket joint will permit not only angular movement of the vise, but will also admit of the vise being turned about its longitudinal axis, thus to bring any one of the implements to proper position for use.

It will be seen by reference to Fig. 3 that the pipe-vise jaw is provided with means for holding a pipe in horizontal as well as in vertical position, the former to permit of lengths of pipe being cut off by an ordinary cutting-tool and the latter to permit of threads being cut upon the pipe. The former is effected by the provision of semicircular or approximately semicircular corrugated recesses 28, disposed below the face of the jaw, and the latter by the provision of semicircular or approximately

semicircular corrugated recesses 29, formed in the opposing faces of the jaw.

The vise of this invention is constructed with a view to simplicity, positiveness of operation, and freedom of danger of breakage or derangement in use, and by the manner in which the various elements are presented a thoroughly efficient and durable tool for the purpose described is presented.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A vise comprising a bed-piece provided with lateral abutments, a pair of socket members disposed between the abutments, a movable jaw and operating-screw therefor, a fixed jaw having a shank provided with a ball to engage the socket members and adapted for rotary movement on an axis coincident with that of the screw, and a bolt carried by one of the abutments and adapted to move one of the socket members into engagement with the ball, thus to lock the shank against rotation and to hold it at any desired adjustment.

2. A vise comprising a base, a stationary jaw having a shank adjustably mounted thereon and adapted for rocking movement in a vertical plane about a transverse axis and for rotary movement about an axis coincident with its long diameter, and a movable jaw combined with the stationary jaw.

3. A vise comprising a base, a stationary jaw having a shank mounted thereon for rotary and rocking movements about axes respectively coincident with its long diameter and transversely thereto, a nut carried by the shank, and a movable jaw provided with a two-part shank to straddle the nut and with a screw to engage the nut.

4. A vice comprising a base, socket members carried thereby, a shank having a ball engaging the socket members and adapted for rotary and rocking movements about axes respectively coincident with its long diameter and transversely thereto, abutments disposed on each side of the socket members, a bolt carried by one of the abutments and engaging one of the socket members to force the same into engagement with the ball, a multijawed head carried by the shank, and a movable multijawed head combined with the shank.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CARL JON LINDGREN.

Witnesses:

AUGUST PETERSON,

ANDY BONSON.