

L. L. SKOW & E. M. F. M. PETERSEN.

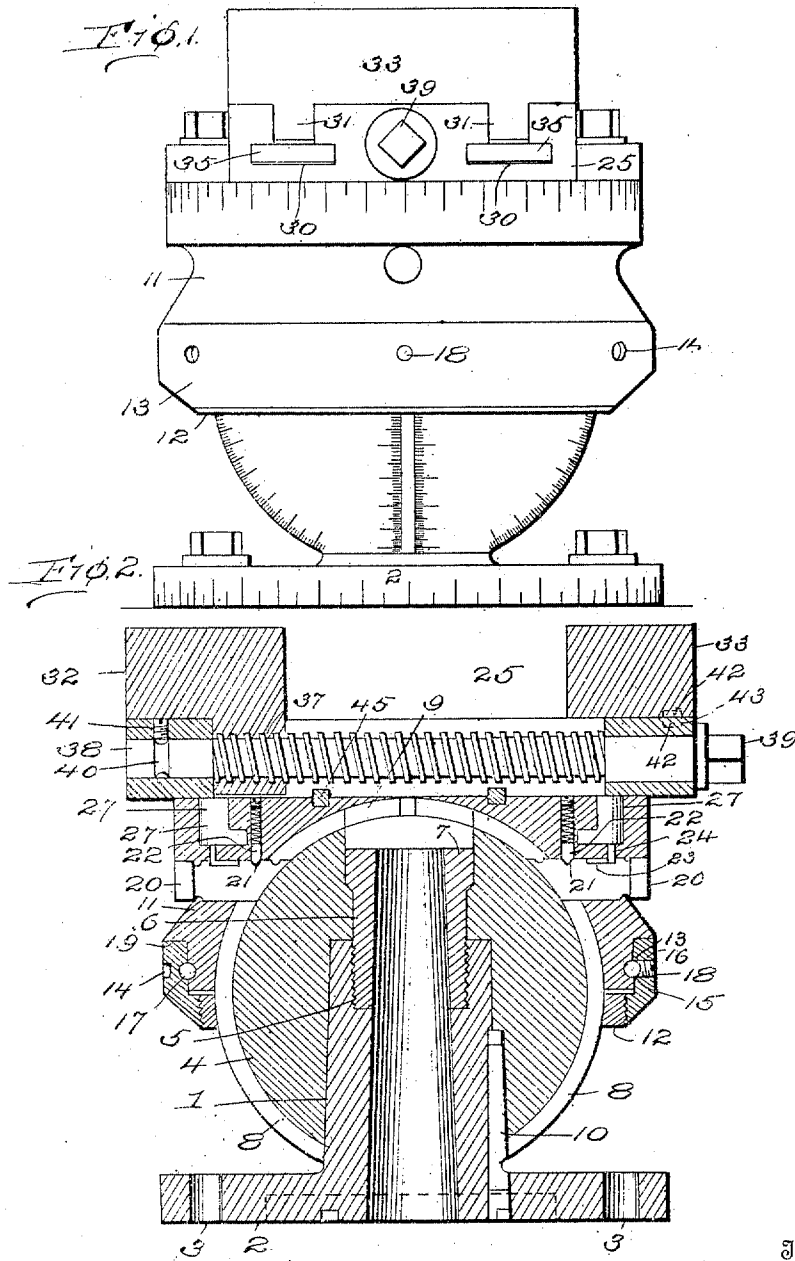
UNIVERSAL VISE AND WORK HOLDER.

APPLICATION FILED APR. 25, 1910

983,091.

Patented Jan. 31, 1911.

2 SHEETS-SHEET 1.



Witnesses.

J. M. Fowler
R. M. Elliott

By

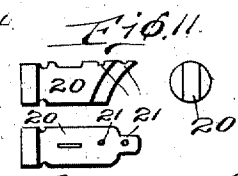
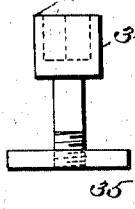
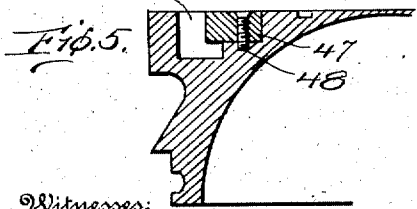
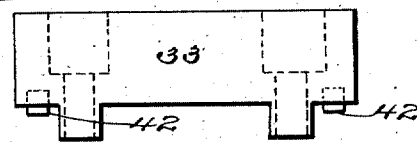
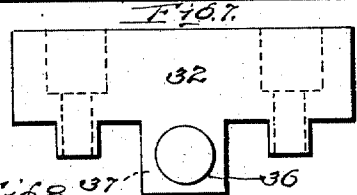
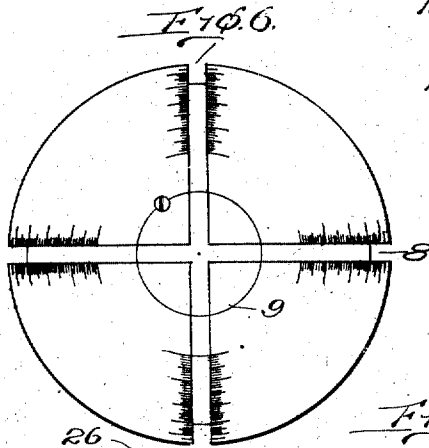
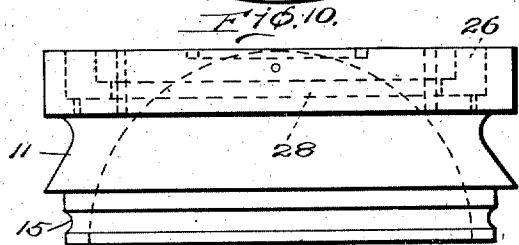
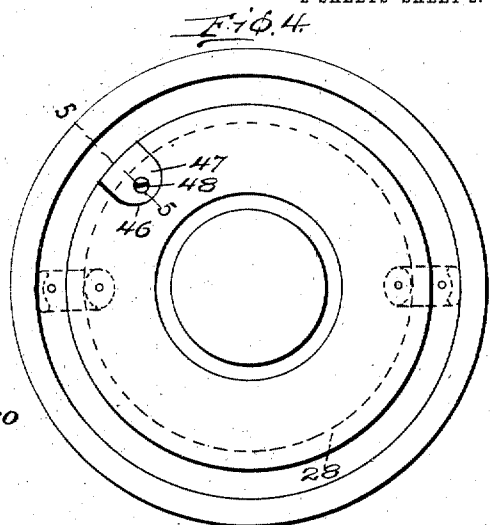
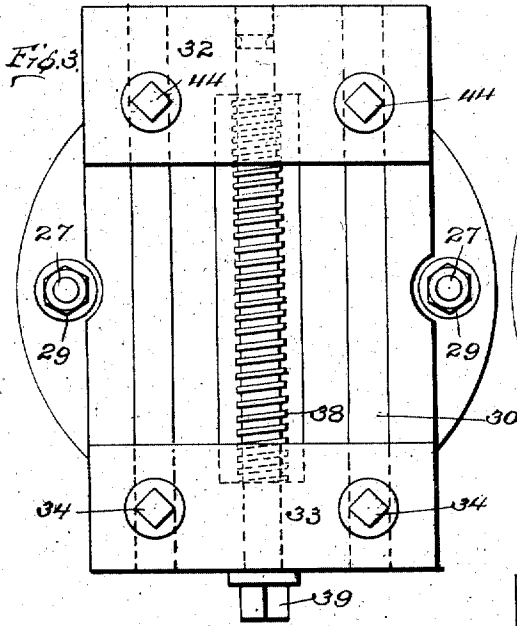
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2 SHEETS—SHEET 2.



Witnesses:
J. M. Fowler Jr.
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UNITED STATES PATENT OFFICE.

LAWRENCE L. SKOW AND EMIL M. F. MÖLLER PETERSEN, OF RACINE, WISCONSIN.

UNIVERSAL VISE AND WORK-HOLDER.

983,091.

Specification of Letters Patent.

Patented Jan. 31, 1911.

Application filed April 25, 1910. Serial No. 557,442.

To all whom it may concern:

Be it known that we, LAWRENCE L. SKOW and EMIL M. F. MÖLLER PETERSEN, respectively a citizen of the United States and a subject of the King of Denmark, residing at Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Universal Vises and Work-Holders, of which the following is a specification.

This invention relates to a universal vise and work holder adapted for use on milling machines, drill presses, grinders, or the like.

The object of the invention is to provide an article of this character in which the jaws may be tilted at any desired angle to the vertical axis of the vise, or be moved in a circular path, and be held in either of such adjustments in a positive manner. Furthermore to provide a vise of this character in which all desired adjustments may readily and rapidly be accomplished.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the novel construction and combination of parts of a universal vise, work holder and the like, as will be hereinafter fully described and claimed.

In the accompanying drawings forming a part of this specification, and in which like characters of reference indicate corresponding parts: Figure 1 is a view in side elevation of the implement. Fig. 2 is a view in vertical longitudinal section. Fig. 3 is a top plan view. Fig. 4 is a top plan view of a portion of the vise, the jaws and operating mechanism therefor being omitted. Fig. 5 is a transverse sectional view taken on the line 3-5, Fig. 4. Fig. 6 is a top plan view of a portion of the vise. Fig. 7 is an end view of a movable jaw. Fig. 8 is a similar view of the stationary jaw. Fig. 9 is a detail view of a form of bolt employed to hold the jaws assembled with the head of the vise. Fig. 10 is a side elevation of a portion of the vise detached. Fig. 11 is a collective detail view of certain parts of the device.

Referring to the drawings, 1 designates the standard or pedestal of the vise, which is provided with a base-plate 2 having orifices 3 designed to receive bolts to secure

the standard to a milling machine, drill press, grinder, bench or to any object desired.

The standard 1 is tapered and is designed to engage a similarly shaped socket in a ball 4, the upper end of the standard being provided with a threaded socket 5 to receive the threaded terminal of a screw 6, the head 7 of which is countersunk in the ball. The ball is provided with two peripheral grooves 8 disposed at right angles to each other, which are continued through a filler block 9 that is seated within the socket formed to receive the head of the screw 6 the outer portion of the block being rounded to constitute a continuation of the periphery of the ball, as shown in Fig. 6. To prevent the ball from having any rotary motion upon the standard, the latter and the ball are each provided with a tapered groove, and these two grooves register and present a seat to receive a key or pin 10 that is driven upward through the base-plate.

Mounted upon the ball and conforming to its curvature is a block or cap 11 fitted with a clamping ring 12 and a clamping or retaining band 13, therefor, said band being suitably provided with notches or sockets 14 to be engaged by a pin wrench by which the band may be turned. To hold the band 13 assembled with the block or cap 11, the latter is provided exteriorly with a semi-circular race 15 and the band interiorly with a complementary race 16, and these two races are engaged by bearing balls 17 that are supplied through an opening in the band that is normally closed by a threaded plug 18. That portion of the socket that is engaged by the band is circumferentially reduced to provide a downwardly facing shoulder 19, and this will receive the thrust of the band and relieve the balls of undue friction.

As will be noted by reference to Fig. 2, the lower edge of the clamping ring is disposed below the center of the ball 4 so that when the band is turned the ring will be moved upward and the cap downward and thus firmly clamp the latter against movement and at any desired angular adjustment.

The grooves 8 of the ball are engaged by two bolts 20 mounted in aligned orifices in the cap, and each of these bolts is provided with two seats 21 that are designed to be

engaged by a vertically arranged spring-pressed pin 22, which, by coaction with the seats, will serve to hold the bolts either in or out of engagement with the ball. When the bolts are in engagement with the ball the cap will be held against turning around the ball, and when the bolts are out of engagement with the ball the cap will be free for movement. Under the latter conditions it will be understood, of course, that the band 13 is loosened. In order to prevent the pins from turning, as they are circular in cross section, and to insure proper co-action between the seats and the pins, each bolt is provided with a longitudinal groove 23 that is engaged by a stud or projection 24 carried by the cap.

Mounted upon the cap 11 is the vise head 25, shown in section in Fig. 2 and in elevation in Fig. 1. This head is provided with orifices 26 to receive bolts 27, which are L-shaped and engage a similarly shaped circumferential groove 28 in the cap, nuts 29 engaging the bolts serving to confine the vise head firmly with the cap.

As shown in Fig. 1, the head 25 is provided with two parallel T-shaped grooves 30, the necks of which are engaged by studs or projections 31 on the jaws 32 and 33; the former of which is movable and the latter stationary. Each jaw is provided with a pair of counter-sunk openings to receive screws 34 that extend beyond the studs 31 and have their terminals threaded to be engaged by nuts 35 arranged within the grooves 30. The movable jaw 32 is provided with an intermediate lug 36 that is provided with a threaded orifice 37 to be engaged by an operating screw 38, one end of which projects beyond the head and is provided with a preferably polygonal shoulder 39 to be engaged by a wrench, and the other end of which is provided with a circumferential groove 40 to be engaged by a pin 41 against unscrewing. The stationary jaw 33 is provided on its under side with a plurality of pins or lugs 42 that are designed to engage depressions 43 in the upper face of the cap 11. By this arrangement, when the screws 44 are loosened, that hold the jaw assembled with the head, the former may be adjusted along the head and be positively held against slippage by the lugs 42.

In order to maintain the head properly centered relatively to the cap, and also to dispense with a center pin for this purpose, a ring 45 is employed, which is rectangular in cross-section and fits in two registering annular grooves formed in the under side of the head and the upper side of the cap.

As will be seen by reference to Fig. 1 the head, ball and base plate are provided with graduation marks to determine angular or other adjustments of the parts when in use.

To permit insertion and removal of the bolts 27 from the groove 28, the inner wall of the groove is cut away at one point as shown at 46 in Fig. 4, the incut being sufficient to permit passage of the lower ends of the bolts 27 into the groove and this recess 46 is normally closed by a filler piece 47 held assembled with the cap by a screw 48.

From the foregoing description it will be seen that the device of this invention may be employed as an ordinary bench vise, or any kind of machine where its use would be of advantage.

We claim:

1. A device of the character described, including a peripherally grooved spherical member, supporting means therefor, a cap arranged upon and conforming to the curvature of said spherical member and carrying vise jaw supporting means, means carried by said cap received by the grooves of said spherical member and engaging said member, a band encompassing said cap, said band and cap being provided with complementary races, bearing balls received by said races, and retaining means for said band.

2. A device of the character described, including a peripherally grooved spherical member, supporting means therefor, a cap arranged upon and conforming to the curvature of said spherical member and carrying vise-jaw supporting means, means carried by said cap, received by the grooves of said spherical member and engaging said member, said cap being reduced from below, a downwardly facing shoulder thus being formed thereon, a band encircling said cap and received by the reduction thereof, means for the retention of said band in contact with said shoulder, said band and cap having complementary races, and bearing balls arranged in said races.

3. A device of the character described, including a peripherally grooved spherical member, supporting means therefor, a cap fitted upon said spherical member and carrying vise-jaw supporting means, means carried by said cap, received by the grooves of said spherical member and engaging said member, said cap being reduced from below, a downwardly facing shoulder thus being formed thereon, a circular band encircling said cap and received by the reduction thereof, said cap and band having complementary races therein, bearing balls arranged in said races, and a ring having screw-threaded connection with said band for its retention in place and forcible engagement with said shoulder, said ring also contacting with said spherical member.

4. A vise comprising a peripherally grooved ball, a pedestal therefor, means for preventing rotary movement of the ball relatively to the pedestal, a cap, means carried

by the cap to clamp it to the ball, bolts carried by the cap, and engaging the grooves and being provided with pairs of seats, spring pins carried by the cap to engage the
5 seats to hold the bolts in or out of engagement with the grooves, and jaw members supported by the cap.

In testimony whereof we affix our signatures in presence of two witnesses.

LAWRENCE L. SKOW.

EMIL M. F. MÖLLER PETERSEN.

Witnesses:

CHRISTIAN JOHNSON

R. ANDERSEN.