

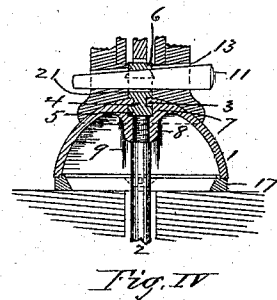
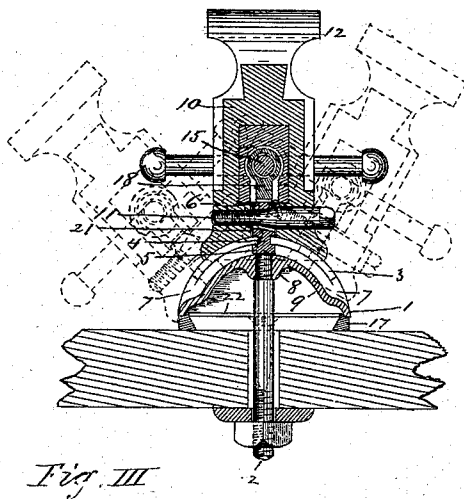
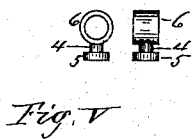
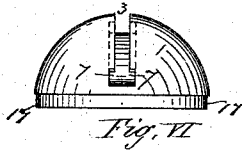
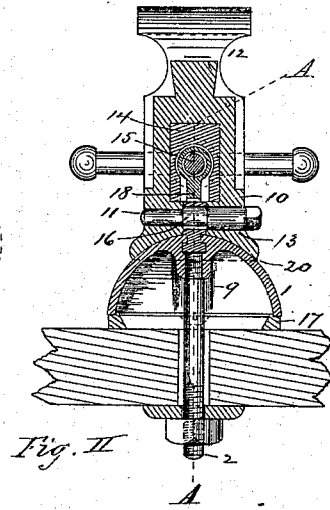
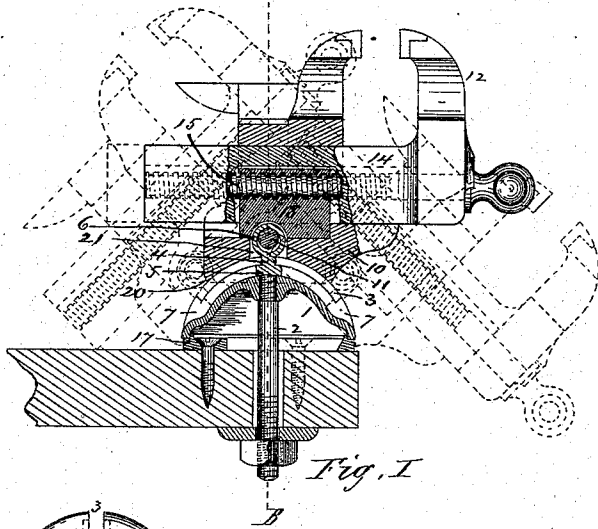
(No Model.)

G. H. WOOD.

BENCH VISE.

No. 274,242.

Patented Mar. 20, 1883.



Witnesses.
Chas. H. Wood.
E. C. Weston.

Inventor.
George H. Wood,
By J. A. Lewis
his Atty.

UNITED STATES PATENT OFFICE.

GEORGE H. WOOD, OF SPRINGFIELD, MASSACHUSETTS.

BENCH-VISE.

SPECIFICATION forming part of Letters Patent No. 274,242, dated March 20, 1883.

Application filed December 30, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. WOOD, of Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in Bench-Vises, of which the following is a specification.

The object of my invention is to provide a bench-vise which may be tilted to any desired angle and then secured, to facilitate operations upon the work held in the vise; and I accomplish this by the mechanism substantially as hereinafter described, and illustrated in the accompanying drawings, in which—

Figure I is a side view of a vise made according to my invention, showing the tilting mechanism in vertical section at line A of Fig. II. Fig. II is a vertical section of the same at line B of Fig. I, showing an eccentric retaining-pin. Fig. III is a vertical section at the same line B, showing a conical screw retaining-pin. Fig. IV is a vertical section at the same line B, showing a tapered retaining-pin. Fig. V is an end and side view of the fastening-swivel; and Fig. VI is a side view of the hemispherical support or ball upon which the vise rests, and to which it is secured, showing the groove and slot in which the swivel operates.

In the drawings, 17 represents a circular base-plate or ring, whose upper surface, near its outer edge, is made plain and smooth to receive the lower edge of a hollow semi-spherical support, 1, which, for convenience of description, I denominate the "ball," which is provided with an internal boss, 8, in which is made a threaded hole to receive a screw-bolt, 2, threaded at its lower end, with a nut turned thereon, by means of which the ball 1 is held securely in any desired horizontal position on the ring or plate 17. I make an internal rib, 9, on the interior of the upper side of the ball, in which rib I make a curved slot or groove, 7, and just above this groove 7, I make a narrower slot, 3, opening out through the upper side of the ball, said slot extending from near the edge of the ball, at one side, in a direct line over to the other side, near the edge, as shown clearly in Figs. I and III. A swivel, 6, having a hole through its upper end, with a flange, 5, on its lower end, as shown in Fig. V, is inserted, with its flange 5 in the groove 7, and with its

neck 4 through the slot 3, so that the upper end of the swivel, having the hole therein, projects above the upper convex surface of the ball.

10 represents the stationary jaw of the vise, 12 the movable jaw, and 14 the horizontal arm of the movable jaw, through which extends the screw 15, which is turned through the nut 18. All these parts are or may be of the ordinary construction, with the exception of the lower end of the stationary jaw 10. In the extreme lower end of this stationary jaw I form a concave recess, 20, to fit the convex upper surface of the ball 1, with a vertical cavity, 21, in the lower part of this stationary part, to receive, and into which projects, the upper end of the swivel, having the horizontal hole therein. In the lower part of this stationary part of the vise I make a horizontal hole to receive a retaining-pin, 11, which, when in place in said hole, extends through the hole in the upper end of the swivel. This retaining-pin 11 may have the part 16, which is in the hole of the swivel when in place, made eccentric with the other portion of the pin, which is preferably made cylindrical, so that as said pin is revolved on its axis in the hole and the eccentric rises it will impinge against the upper part of the swivel in the hole, and cam the concave surface in the lower part of the vise down firmly upon the convex portion of the ball 1, and hold the vise firmly in any position into which it may be tilted on the ball, as shown in dotted lines in Figs. I and III, the eccentric construction of the retaining-pin 11 being clearly shown in Figs. I and II.

Instead of making the retaining-pin eccentric where it extends through the hole in the swivel, it may be made conical, as shown in Fig. III, with a screw-thread made on the end of the pin, to be turned into a corresponding screw-thread made in the horizontal hole made in the stationary part of the vise, so that by turning the pin into the hole the conical part of said pin will be drawn more snugly against the upper end of the swivel in the hole, and the concave surface 20 be drawn snugly down upon the convex surface of the ball 1, and the vise be firmly held in its tilted position, as before; or a tapered hole, 13, may be made through the base of the vise, and a tapered re-

taining-pin, 11, be inserted through said hole and through the hole in the swivel, as shown clearly in Fig. IV.

By loosening the nut on the lower end of the bolt 2 the ball 1 may be revolved horizontally on the ring or plate 17, and by turning or loosening the retaining-pin 11 the base or whole vise may be revolved horizontally upon the convex surface of the ball, and may also be tilted into any desired position, or at any angle from a vertical position, as shown in dotted lines in Figs. I and III.

The swivel 6 is inserted by placing the flange 5 at its lower end into the opening to the groove 7, at either end, and by passing the swivel upward its neck or smaller part 4 will enter the slot 3.

A small vertical annular flange, 22, on the upper side of the plate or ring 17, just inside the lower edge of the ball 1, serves to keep the latter in place on said plate or ring.

Having thus described my invention, what I claim as new is—

In an improved swivel bench-vise, a base-plate, a semi-spherical support or ball, 1, supported by and adapted to be revolved upon said base-plate, and provided with a circumferential groove, a swivel adapted to be contained within and moved along said groove, and provided with a transverse hole in its upper end, a vise-jaw whose base is provided with a cavity to receive the upper end of said swivel, and with a transverse hole and a retaining-pin to be inserted into said hole in said base and through said swivel, substantially as described.

GEORGE H. WOOD.

Witnesses:

GEO. E. WARNER,
KITTREDGE HASKINS.