

(No Model.)

G. H. REISSIG.
HAND VISE.

No. 556,163.

Patented Mar. 10, 1896.

FIG-1-

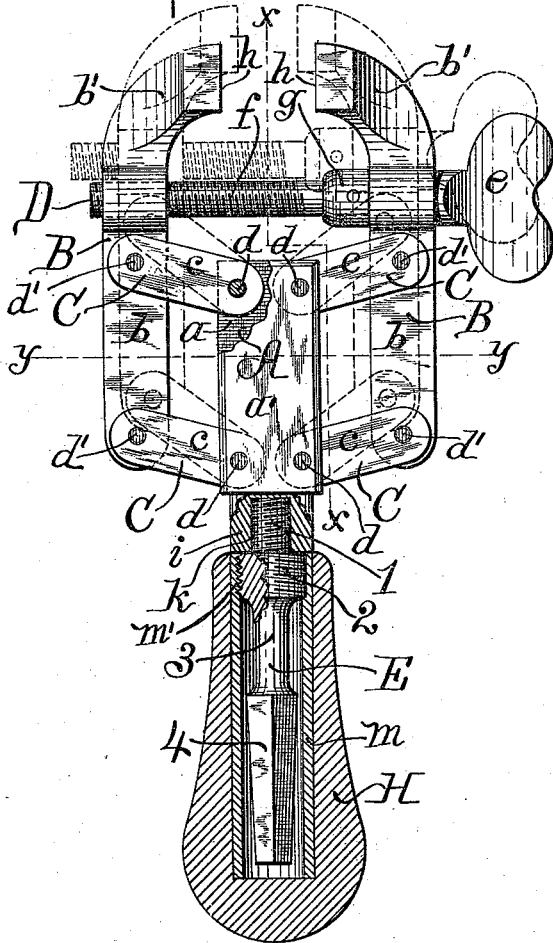


FIG-2-

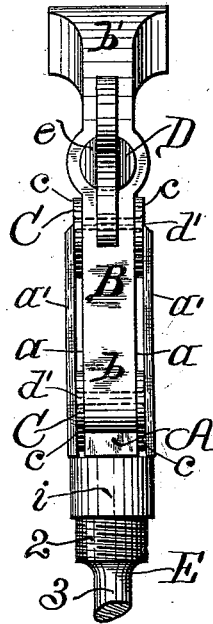


FIG-3-

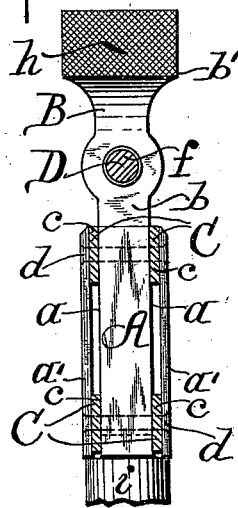
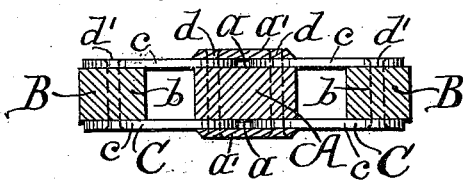


FIG-4-



WITNESSES:

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UNITED STATES PATENT OFFICE.

GUSTAV H. REISSIG, OF SYRACUSE, NEW YORK.

HAND-VISE.

SPECIFICATION forming part of Letters Patent No. 556,163, dated March 10, 1896.

Application filed May 16, 1895. Serial No. 549,521. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV H. REISSIG, a subject of the Emperor of Germany, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Hand-Vises; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, in which—

Figure 1 is an elevational plan or side view of my improved hand-vise with its handle and the boss or butt of the standard-body that supports the jaws, shown longitudinally sectional for thorough illustration of internal parts. Fig. 2 is an edge view, in elevation, of the major portion of my vise, the handle and contained parts being broken off; Fig. 3, a longitudinal section of my device, taken along dotted line *x x*, Fig. 1; and Fig. 4 is a cross-sectional view taken upon dotted line *y y*, Fig. 1, of the drawings.

Like letters and numerals of reference indicate similar parts throughout the views delineated.

My invention relates to that species of vises especially adaptable for being held by the hand of the user, commonly known as "hand-vises," and very generally employed among artisans—as, for instance, machinists, toolmakers, watchmakers, jewelers, plumb-ers, &c.—the sizes of the vises varying in accordance with the particular class of service whereto same are to be utilized for or more particularly adapted.

The object of my invention is the production of a vise of the character stated of increased efficiency, reliability and durability, and, more than all, a device embodying such a formation and arrangement as will, whatever degree the jaws may be apart, invariably and absolutely insure the disposition and the moving of the jaws upon planes thoroughly parallel to attain a positive and uniform grip upon an interposed object and by simple mechanism, while, furthermore, my purpose is the adaptation of the vise for ready utilization with a "brace" or in a "turning-lathe," when desirable, as well as its employment as a hand-vise, *per se*, and having a handle capa-

ble of being grasped and retained by the hand of the artisan using the tool.

My invention consists in the novel features of construction, operation and adaptability now to be described, and specifically set forth in the claims hereto annexed.

Referring to the drawings herewith, A denotes the centrally-located body, flat-like and of elongated rectangular contour, and *a' a'* are non-contacting face-plates of thin metal, covering respectively the parallel flat faces *a a* of the standard-body A and retained in juxtaposition to either face by means soon to be specified.

B B are parallel gripping-jaws located off either longitudinal edge of the standard-body A and equidistant therefrom, which jaws lie parallel to said standard, preferably each similarly-sized jaw being of a length about double that of the standard, the curvilinear approaching heads of the jaws *b' b'* being located on a plane invariably some little distance above the standard A, while the straight dependent extremities *b b* of the jaw members respectively extend longitudinally parallel to the standard A and terminate at a spot contiguous to the plane of the lower edge of said standard, the respective extremities *b b* being of an equal length.

C C C C denote sets of double levers or arms, preferably located as exemplified, the companion levers *c c* comprising each set being disposed oppositely each other, two sets leading from their pivotal connection with the standard-body A laterally and incliningly to the contiguously-located jaw B, while the two other sets of levers extend similarly from the standard to like pivotal connection with the other outlying jaw, the sets nearer the operating-jaws *b'* being denominated the "upper sets," and the other sets being the "lower sets." The levers are all of like dimensions, the degree of upward inclination of them all the same, and the sets of each lateral group of levers invariably lying on parallel planes one to the other, as illustrated. By choice the respective levers are formed of thin flat plates of metal and rounded extremities, as delineated.

Referring to the several sets of levers, one lever *c* of each respective set is so placed that one end lies flatwise against one face of the

standard A, and its other end in like manner abuttingly against a like standing face of the straight extremity *b* of an adjacent jaw member, while the companion lever *c* is similarly disposed against the opposite faces of the members stated.

Contiguous to the longitudinal edges of the standard-body A there are pivot-pins *d*, two at the top and two at the bottom, said pins passing transversely through the body by proper apertures and entering coinciding apertures in the abutting ends of the levers *c c* of each set, from thence enter the face-plates *a' a'*, whereat they are upset, preventing lateral displacement of the levers, the open space (or slotways) existing between the faces of the standard A and its face-plates being sufficient to permit of requisite action of the ends of the levers *C* lying therein. Obviously, when so preferred, the face-plates covering up said ends of the levers *C* may be dispensed with, the prime motive of utilizing said face-plates being the attainment of a more pleasing or finished appearance of the standard portion, and the pivot-pins *d* consequently may terminate within the ends of the levers and be there upset. Particularly desirable is the dispensing of the side plates in vises of my formation of small dimensions for use by jewelers, watchmakers, and the like, while in larger-sized vises adaptable for heavier service the retention of the face-plates is usually desirable for their bracing and stiffening effect. The ends of the respective levers abutting the sides of the jaw extremities are pivotally connected thereto by transverse pivot-pins *d'*, upset at their ends for retention of the levers operatively in place thereon.

Above the standard A there is located a thumb-screw D, passing through holes in the jaw members located between the upper sets of levers C and the gripping-heads of the jaws and comprising a thumb-head *e* and integral threaded stem *f*, and a collar *g*, secured to the screw-stem by a transverse pin or other suitable fastening. The holes in either jaw are of such like circumference as to adapt the entrance therein of the stem portion of said thumb-screw, the hole in that jaw B against the outer edge of which the thumb-head of the screw abuts being interiorly smooth, while the diametrically-opposite hole in the companion jaw B is interiorly threaded for the working of the threaded screw-stem therein. The collar *g* is so located upon the screw-stem as to abut the inner edge of that jaw B wherefrom the thumb-head *e* of the said thumb-screw laterally projects. The parallel gripping-faces *h h* of the curvilinear heads *b' b'* of the jaws may be roughened or smooth, as preferred.

Obviously the function of the collar *g* of the screw-stem *f* is to insure the retention of the interposed jaw B in loose contact with the bearing portion of the thumb-head *e*.

The prime purpose of the thumb-screw D is the carrying of the jaws B B approachingly

or recedingly one to the other and invariably equidistant from a line drawn longitudinally central through the standard A of my device. As is evident, the threaded stem of the thumb-screw meshingly engaging the threaded hole in a jaw B insures through the rotating of said screw corresponding approach or recession of the jaws, according to the direction of its turning.

The prime object of the four pairs of levers C (in conjunction with the action of the thumb-screw) is to insure invariably the gripping-faces of the jaws' heads standing thoroughly and exactly parallel one to the other and whereby a positive and equally-distributed hold is secured on the object to be held between the jaws. Clearly the pivotal travel of the levers not only coincide, but the ratio thereof as to movement must agree with the action of the thumb-screw. Moreover, the parallel lengths *b* of the jaw members are necessarily, through the action of the levers, retained absolutely parallel to the longitudinal straight edges of the standard-body A. Impossible to be otherwise under my novel arrangement of parts. While although of necessity the thumb-screw assumes varying planes according to the widening or closing of the jaws, said planes are exactly transverse to the direction of length of the standard and the straight lengths of the jaws.

My purpose in having double levers in each group C is to effectually obviate any possibility of the laterally-transverse motion or wobbling of the jaws and insuring steadiness.

Possibly in vises of exceedingly-small size it might not be deemed requisite to have four groups of levers, as illustrated, in which case I may employ single levers centrally pivoted to the standard at their inner ends and overlappingly. However, my preference is the utilization in all sizes of my vise of the double form of levers herein shown.

As is noticeable, in Fig. 1 of the drawings I illustrate by full lines the jaws disposed apart some considerable degree, while by dotted lines I indicate the relative position of same, the thumb-screw and the series of levers when the jaws are brought more nearly together thereby serving to clearly exemplify the operation of the parts.

At its lower end the standard-body A terminates in an integrally-formed boss or butt *i*, preferably of disk shape, wherefrom detachably extends centrally and lincal with the standard a shank-piece E of suitable length, which shank-piece has a cylindrical threaded end 1, which is screwed into a central threaded opening *k* in the boss or butt *i* of the standard A, and below the threaded end is a flange or swelled portion 2, whose periphery is threaded, thence a contracted or neck portion 3, terminating in a tapering three or four sided shank extremity 4.

The flange 2 is of a diameter smaller than that of the boss or butt *i* of the standard A. The threaded end 1 and neck 3 are respect-

ively of a diameter less than that of the flange
aforementioned, while the shank extremity
4, at and contiguous to its junction with the
neck, is of a diameter exceeding that of said
5 neck, and yet less than that of the hereinbe-
fore-referred-to flange.

H is a handle of usual shape, preferably pro-
vided in its internal bore with a metallic fer-
rulle *m*, snugly and rigidly fitting same, the
10 length of the bore and its contained ferrulle
being sufficient to admit of the reception
within said handle of all the parts of the out-
standing shank-piece E, and the interior of
the ferrulle of sufficient diameter to permit
15 no binding of the shank extremity with the
ferrulle, but entirely free and clear thereof.
At its top or forward end said ferrulle is interi-
orly threaded, as at *m'*, whereby, upon the
handle H being slid over the shank-piece E,
20 said handle is tightly secured to the standard
A through the intermediate threaded flange 2
of the shank-piece screwing into the handle,
as indicated clearly in the drawings.

While ordinarily I employ my device as a
25 hand-vise essentially, and in such usage, as is
obvious, the handle H is utilized therewith,
yet through the adaptability of my formation
my vise may readily be employed, if desired,
in connection with an ordinary brace, such
30 as is used for holding a twist-drill or a tap,
merely by unscrewing the handle H and lay-
ing it aside, and then inserting the shank 4
in a brace.

My purpose in having the shank-piece E
35 susceptible of separation from the butt *i* of
the standard-body A is for the utilization of
my tool in connection with a turning-lathe
when so wished.

Having thus fully described my invention,
what I claim as new, and desire to secure by 40
Letters Patent, is—

1. A hand-vise comprising a central stand-
ard, jaws disposed at opposite sides thereof
and parallel thereto, a plurality of levers ex-
tending from the standard to the jaws and 45
pivotaly connected thereto and the standard,
and a thumb-screw standing transversely
across from one jaw to the opposite jaw upon
a plane higher than the standard, substan-
tially as described. 50

2. A device of the class described, compris-
ing in combination with a standard support-
ing gripping-jaws, a detachable shank-piece
extending out longitudinally from said stand-
ard and transversely angular along its extrem- 55
ity, and a hollow handle adapted to cover
said shank-piece by a separable connection
therewith at its part contiguous to the base
of the standard, substantially as described.

3. The combination, in a hand-vise, of a 60
central standard, jaws at either side thereof
provided with elongated extremities extend-
ing parallel to the standard, upper and lower
sets of levers pivotaly connecting the jaw
members with the standard, and a manipu- 65
lating-screw extending across from jaw to jaw
adapting them to concurrent adjustment,
substantially as described.

In testimony whereof I affix my signature,
in presence of two witnesses, this 21st day of 70
December, 1894.

GUSTAV H. REISSIG. [L. S.]

Witnesses:

WM. C. RAYMOND,
E. KANKEMOELLER.