

(No Model.)

R. E. M. BAIN.

WISE.

No. 376,623.

Patented Jan. 17, 1888.

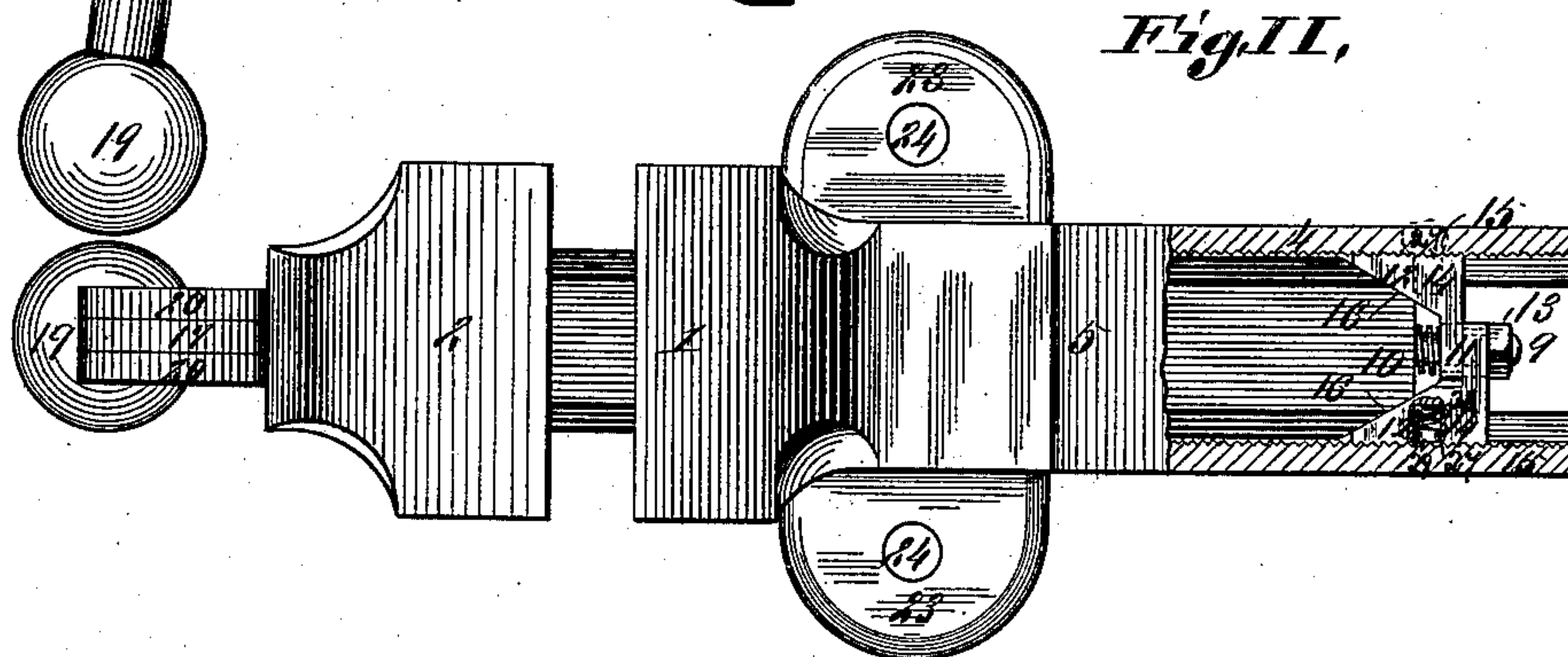
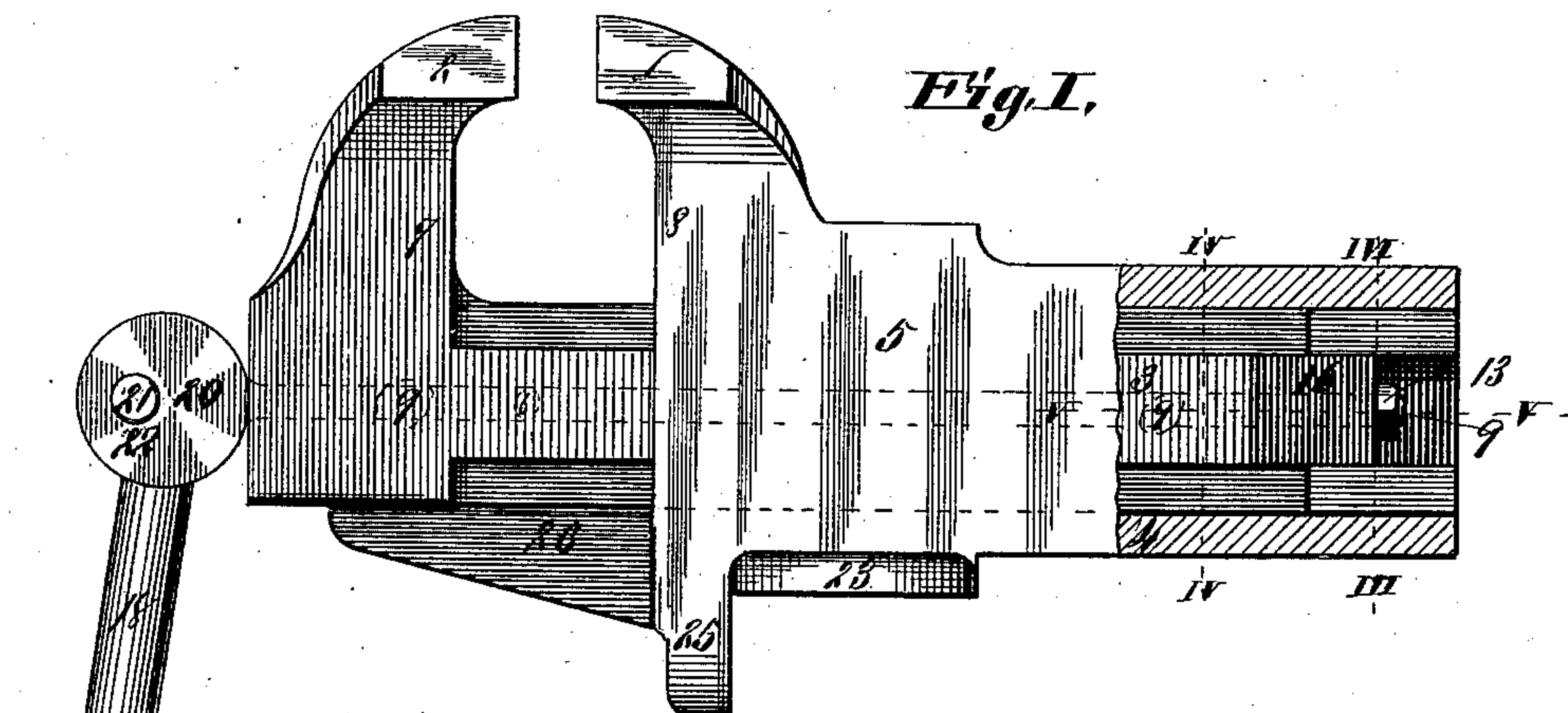


Fig. III,

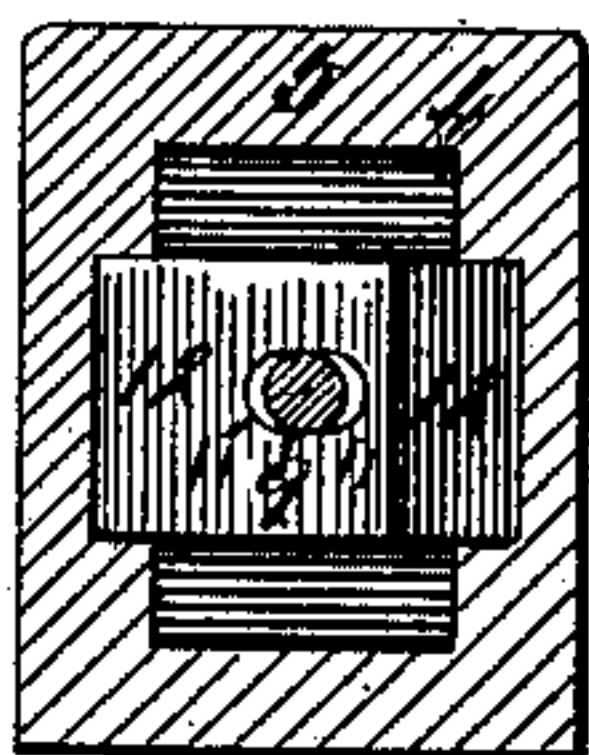


Fig. IV,

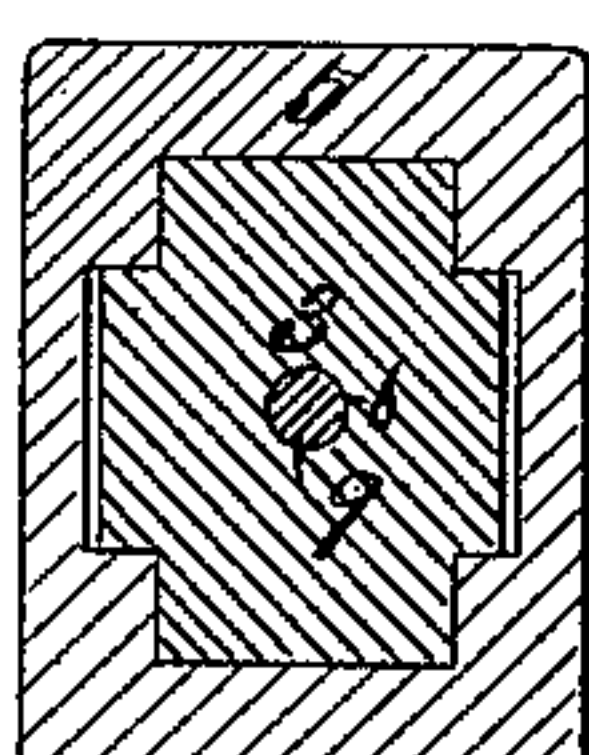


Fig. V,

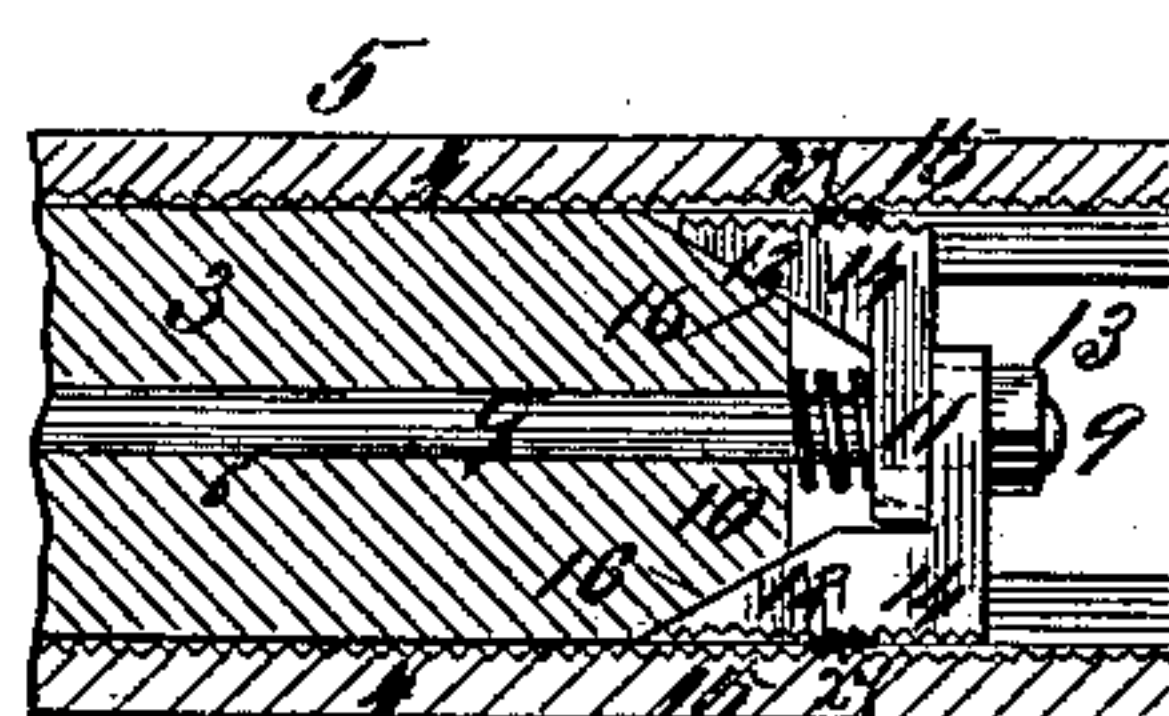
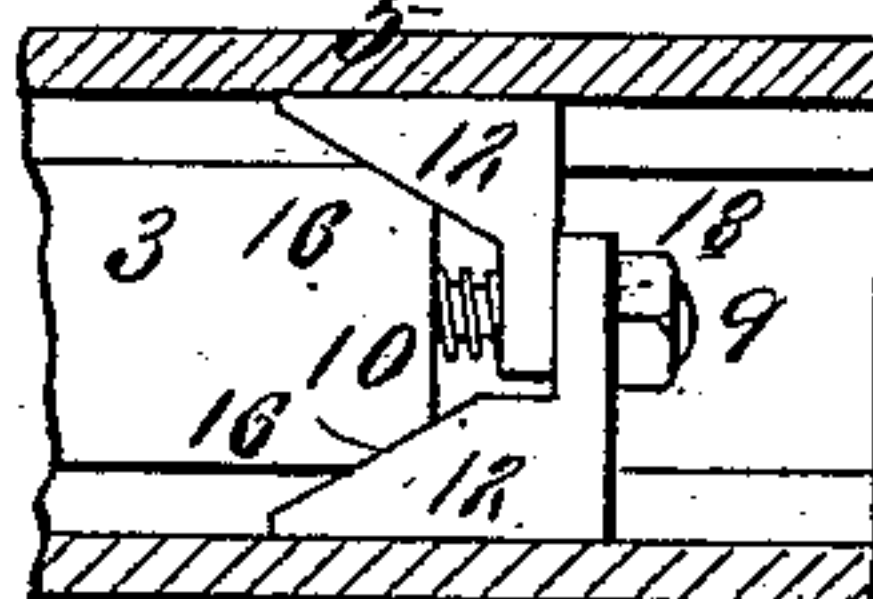


Fig. VI,



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UNITED STATES PATENT OFFICE.

ROBERT E. M. BAIN, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO
GRAY STAUNTON, OF SAME PLACE.

WISE.

SPECIFICATION forming part of Letters Patent No. 376,623, dated January 17, 1888.

Application filed July 8, 1887. Serial No. 243,773. (No model.)

To all whom it may concern:

Be it known that I, ROBERT E. M. BAIN, of the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Sliding-Jaw Vises, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

10 Figure I is a side view of my improved vise, part broken away to show the position of the stem of the sliding jaw when thrown in to effect the grip of the clamping-wedges. Fig. II is a top view with part broken away to show the bevel edges of the stem expanding the wedge-clamps to engagement with their corrugated seats to hold the grip. Fig. III is a transverse section taken on line III III, Fig. I, showing the wedge-clamps with their expand-
15 able bearings. Fig. IV is a transverse section taken on line IV IV, Fig. I, showing the sliding stem within the casing of the stationary jaw. Fig. V is a longitudinal detail section taken on line V V, Fig. I, showing the stem of the sliding jaw and the clamping-wedges re-
20 laxed; and Fig. VI is a longitudinal detail section of a modification, showing the clamping-wedges working in a smooth track, relying on friction for retention.

30 This invention relates to devices in sliding-jaw or sudden-clamp vises; and the invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Referring to the drawings, in which figures
35 of reference indicate like parts in all the views, 1 represents the stationary jaw of my vise, and 2 the sliding jaw thereof. 3 is the stem of the sliding jaw, that works longitudinally in the elongated slot 4 within the case 5 of the sta-
40 tionary jaw. The stem of the sliding jaw in transverse section is in the form of a St. George's cross, and is thereby effectually re-enforced against any wringing tendency of the jaws in effecting their grip. There is, how-
45 ever, unlike the screw vise, no wringing tendency in its movements, except the slight lateral pressure sometimes caused by the grip of the jaws on objects of irregular form, for it has otherwise a direct longitudinal clamping move-
50 ment. The sliding stem 3 is provided with a central longitudinal bore, 6, from end to end,

that also extends through the pedestal 7 of the sliding jaw, which pedestal and the jaw that surmounts it are in parallel position to the sta-
55 tionary pedestal 8 and its surmounting jaw. A shaft, 9, is seated in said bore, and has an extension beyond the sliding stem that carries a spiral spring, 10, and passes through oval-shaped perforations 11 of the twin edges or bevel-faced clamps 12, which are secured on
60 the threaded end of the shaft by the screw-nut 13.

The end of the stem 3 of the sliding jaw has vertical bevel faces 16, that run parallel to the bevel faces of the wedge-clamps. The wedge-
65 clamps have corrugations 14 on their straight sides, which, when said clamps are expanded apart and become operative, engage in the corrugations 15 in the elongated slot 4 within the case of the stationary jaw. 70

On the outer end of the shaft 9 is a disk-head, 17, integral thereon. A clamping-lever, 18, weighted with a ball-knob, 19, and provided with a bifurcated eccentric cam-head, 20, has pivotal connection to the disk-
75 head 17 by the bolt 21, that engages in the eccentrically-located perforation 22 through the cam and disk-head.

Side brackets, 23, on the bench-seat of the stationary member of the vise, have perfora-
80 tions 24, in which screw-bolts may be seated to secure the vise to the bench, and a vertical lug, 25, firmly presses against the front edge of the bench to hold the vise from twisting on its seat. A bracket, 26, projects in front of
85 the bench from said stationary member, and supports the sliding jaw and its stem, and also forms a track on which it slides.

Spiral springs 27 are seated in sockets 28 in the wedge-clamps 12, and carry caps 29, that
90 bear against the outer seat in which said clamps slide. When the eccentric cam-lever is relaxed, the spiral spring 10 projects said jaw with its stem forward. The spiral springs 27 then throw the wedge-clamps loose from their
95 corrugated seats to enable the sliding jaw to be withdrawn without difficulty.

The operation of the vise is as follows: The article to be held by the vise being placed
100 within its jaws and the eccentric cam-lever 18 elevated, the stem of the sliding jaw is pushed in until its beveled end presses against the

spiral screw 10. The cam-lever is then brought down, in the first place, forcing the bevel edges of the stem of the sliding jaw within the corresponding bevel edges of the twin wedge-clamps, pressing them apart and bringing their corrugated back edges into engagement with the corrugations 15 in the elongated slot, and thus stationing said wedge-clamps and locking them on their seats. At the same time, by the continued pressure of the lever, the spiral spring is pushed home for future service, and an instantaneous tight grip of the jaws on the article they embrace is effected.

It will be seen that the oval perforations through the wedge-clamps, through which the shaft 9 passes, allow said wedges to shift their bearings laterally, both to allow the corrugated edges of the clamps to be forced into engagement with their corrugated seats, and when said wedge-clamps are released the spiral springs 27 in their sockets in said wedge-clamps unlock them from their seat.

To ungrip the vise, the eccentric cam-lever is again elevated. The return action of the spring then repulses the stem of the sliding jaw, which allows the spiral springs 27 to unseat the wedge-clamps by projecting them out of their corrugated seats, and the jaw can then be slid out to any extent required.

I have described my invention with corrugated wedge-clamps as my preferable form; but I do not so confine myself, for the same device may be operated with smooth friction wedge-clamps with smooth friction-seats within the elongated slot, especially for light work, where there is no sudden jar or strain to endanger the loosening of the grip.

It will be seen that the sliding jaw is enforced with a direct longitudinal movement to its work, avoiding the twisting or wringing inclination inseparable from all screw vises; also, the end action of the eccentric cam-lever is direct in line with the line of propulsion of the sliding jaw, avoiding the lateral friction that would result if the lever operated from the side of the vise; also, by the use of a vertical cam-lever instead of a horizontal one, I am enabled to utilize a ball-knob, 19, thereon as a gravity-lock to enforce the continuous pressure of the jaws.

I claim as my invention—

1. In a sliding-jaw vise, the combination of the stationary jaw 1, provided with an elongated slot, in which the stem 3 of the sliding jaw 2 engages, the shaft 9, that passes through said stem, and at one end engages the wedge-clamps 12, to clamp said end, and has at the other end a head-disk, 17, that is pivotally

connected to the eccentric cam-lever 18, arranged as a sudden-action sliding clamp to enforce the grip of the jaws, substantially as described, and for the purpose set forth.

2. In a sliding-jaw vise, the combination of the stationary and sliding jaw, the former provided with an elongated slot and the latter having a horizontal stem that engages in said slot, the bevel edges of said stem that engage the bevel edges of the wedge-clamps and force them to engagement in their corrugated seats, said wedges and the spiral spring 10 being secured by the shaft 9, that passes through said stem and is operated by the eccentric cam-lever to effect a sudden sliding clamp-grip of the jaws, said wedge-clamps carrying spiral springs 27, substantially as described, and for the purpose set forth.

3. In a sliding-jaw vise, the combination of the stationary and sliding jaws, the shaft 9, operated by the eccentric cam-lever and passing through the pedestal 7, stem 3, and corrugated wedge-clamps that are provided with oval perforations, and said shaft carrying the spiral spring 10, all arranged to force the wedge-clamps into their corrugated seats, clamp the grip by the eccentric cam-lever, and when released by the eccentric cam project the stem by the spiral screw and release the wedge-clamp, and then allow them to be unseated from their locking-seat by the spiral springs 27, substantially as described, and for the purpose set forth.

4. In a sliding-jaw vise, the combination of the stationary and sliding jaws, the projected bevel end of the stem of the latter enforcing the engagement of the corrugated wedge-clamps in their corrugated seats, the shaft 9, spiral unclamping-spring 10, the spiral unlocking-springs 27, and the disk-head 17, that is pivotally engaged by the eccentric cam 20 of the lever 18, said lever having a ball-weight, 19, to enforce the clamp, substantially as described, and for the purpose set forth.

5. In a sliding-jaw vise, the combination of the stationary and sliding jaws, the projected bevel end of the stem of the latter enforcing the clamp of the smooth friction-wedges 12, the spiral unclamping-spring 10 on the shaft 9, that carries the wedge-clamps, said shaft passing through said stem, and the disk-head 17, pivotally engaged by the eccentric cam of the ball-lever and operated to effect a sudden clamp-grip of the jaws, substantially as described, and for the purpose set forth.

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In presence of—

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